7/6

1. *Painted Lady.*
2. *Black Kidney.*
3. *Pink Eye.*
4. *White Veglot.*
5. *Golden Eagle.*
6. *Black Potato.*
7. *Walnut Leaf.*

WARNE'S MODEL HOUSEKEEPER:

A MANUAL OF

DOMESTIC ECONOMY

IN ALL ITS BRANCHES.

COMPILED AND EDITED BY

ROSS MURRAY.

WITH ORIGINAL ILLUSTRATIONS PRINTED IN COLOURS BY KRONHEIM.

AND NUMEROUS WOODCUTS.

LONDON:
FREDERICK WARNE & CO.,
BEDFORD STREET, STRAND.

LONDON:
R. CLAY, SONS, AND TAYLOR, PRINTERS
BREAD STREET HILL.

PREFACE.

THIS companion volume to Warne's MODEL COOKERY BOOK has been in course of preparation for more than three years. During its progress the Editor has attentively watched for all new discoveries in Science or Art, and has carefully tested the receipts and advice sent in by Contributors, so as to ensure their practical utility.

Of the Articles, the one on Potatoes is from the pen of Miss Hartshorne, well known from her own and her father's talents; Miss Jewry, the Editor of the MODEL COOKERY, has examined or contributed the additional Cookery receipts and useful House hold information; Major McCoy and two ladies of good position contribute first-rate amateur experience of the Poultry Yard.

The Stable and the Dairy are original articles by competent authorities.

For "Domestic Science" (though chiefly original), use has been made of Professor Pepper's "Cyclopædic Science." The "History of Pottery and Porcelain," by Joseph Marryat, Esq. (which every householder of taste in Ceramic Art should possess), has afforded some of the information given with regard to old china, in

addition to the personal experience of the editor. The works of Henderson, Cyrus Redding, and the Supplement to the "Encyclopædia Britannica" are briefly quoted—in conjunction with the practical knowledge of a first-rate wine merchant—on the subject of wines.

The advice how to act in case of accidents, the remedies for poisoning, and instructions for the care of the sick, have been contributed by an experienced Surgeon.

The Plates, printed in Colours by Kronheim & Co., have been executed from original designs by eminent artists.

The Publishers and Editor unite in offering their best thanks to numerous Contributors, and trust that their labours may be rewarded by the acknowledged utility of a popular and practical Manual of Household Economy.

BEDFORD STREET.

CONTENTS.

LIST OF COLOURED PLATES.

LIST OF WOODCUTS.

THE

MODERN HOUSEHOLDER.

INTRODUCTION.

To a people who dwell so much in their homes as the English, any information which can tend to make those seats of domestic life happier, more comfortable, brighter, and more attractive, should be welcome; and that it is so, the success of most of the popular home literature bears evidence.

There are numerous works on the subject of housekeeping, but every day modern Science adds to our knowledge of facts tending to improve domestic comfort, and to promote health. Lectures on cookery, schools for instruction in it, the Food Gallery of the South Kensington Museum, offer us a surprising amount of information as to the most nourishing diet and the best mode of preparing it; while the secrets of chemistry and the principles of art and of good taste are placed freely before us, to assist us in cleansing and adorning our dwellings. To gather up some crumbs from this banquet of knowledge has been our endeavour in this volume, which, though not exclusively designed for the mistress of the household (the stable-yard, etc. being exceptions) will still, we trust, prove most acceptable to those in whom the "rightful sway and due supremacy" of home is centred—the "housemother," as the Germans expressively style her.

It is not too much to say that the welfare—present and future—of the family depends chiefly on the manner in which the Mother sways the domestic sceptre. Freedom from painful pecuniary anxieties, comfort, health, peace, and joy all depend mainly on her wise use of the power entrusted to her. Even future generations may be influenced for good by her care, or for evil by her indolence and neglect. For executing so great a trust, knowledge is imperatively necessary. The tenderest and best-meaning ignorance often injures where it would fain serve; and modern education has been somewhat to blame in not blending more of domestic training with the accomplishments which would well harmonize with it. Artistic taste has a wide field for its exercise in the home, and music is one of its best relaxations; the arts need not be abandoned for the scientific knowledge which is so important, nor for household duties, which when well and regularly performed occupy no great deal of time. We believe, as education takes a higher and more thorough tone, domestic knowledge will advance with it. Every little aid which can be given on the subject should meantime be afforded; and it is in order to add our mite to

the general attempt in this direction that we have collected from many sources, and gathered from the memoranda of old families numerous receipts for domestic needs, and have also attempted to offer some popular hints on Science in its connexion with daily life, and on the constituents of the food which supports our existence. To give the analysis of every article of it was not possible in a volume of this size, containing so much also of other matter; we have contented ourselves, therefore, with presenting a general idea of the constituents of animal and vegetable substances, to guide the housekeeper in judiciously assorting the materials which spread her table.

The article on the Dairy is from the pen of a writer practically and thoroughly acquainted with the subject; the same may be said of those on the Stable-yard and Poultry-yard.

The prescriptions for slight family ailments; the hints of what should be done in case of accidents or poisoning; the articles on ventilation, the sick room, climate, sleep, diet in relation to disease, etc. etc., have been contributed by a Member of the Royal College of Surgeons, and may therefore be entirely relied on.

Neither have we forgotten the speechless (we cannot say mute) friends who often share our dwellings; some knowledge of their ways and wants cannot fail to be useful, and the experience of the accomplished writer on Domestic Pets assures the excellence of her instructions.

One thought has forcibly presented itself to the Editor's mind while she has been occupied with her task,—namely, how wonderfully the wisdom and goodness of the Creator are displayed in the system by which all his creatures are fed; and by the adaptation of different kinds of food to their need and comfort. How marvellous is that great chain of being by which animals depend on vegetation for existence; man on animals *with* vegetation, and vegetation itself on the breath of animal life;—all in the first place nourished by the bounteous earth, and her mantle of air—for the analysis of food might go far deeper than the constituents given in our tables, and be traced back to the gases themselves.

We believe that even so superficial and popular a sketch as we have given of this subject—we trust it may lead to real study of the matter—can scarcely fail to impress the mind with awe, and gratitude to Him who "openeth His hand and filleth all things living with plenteousness."

THE HIRED HOUSE.

THE choice of a house is a matter of no small moment. It must be directed necessarily in the first place by the means of the inmate, or by the needs of his position or profession.

It is usual to say that the rent and taxes of the house should not exceed the eighth part of the occupier's income. We believe that this rule is rarely carried out. A man often requires a large and well-situated house in town for his profession; it would be ruin for him to live in a cheap house in a shabby or poor neighbourhood; or well-born and well-connected *poor* people find that they must (to retain their position in society) live in a higher rented locality than they can quite afford. In these cases the housewife will often be required to exercise more vigilant economy than might otherwise be necessary. (Let us advise her to practise it on superfluities and dress: but of this hereafter.)

Next to the requirements of means and position, we must put those of health. In fact they *ought* to be our chief consideration, for *no* house is cheap if it be ill-drained, ill-ventilated, damp or dark,—defects on account of which houses are often let cheaply, and considered bargains. Alas! is the dwelling cheap which is paid for with life, or energy?

Let the householder, therefore, select as healthy a locality as circumstances will admit, with a clear passage for air at the front and back of the house—taking care that the outer air does not pass over any nuisances, as dirt-heaps, uncovered sewers or ditches, in its way to the open windows, bringing poison—slow and fatal—on its wings!

His next care should be to inquire carefully about the drainage of the future home. The hirer should ascertain if there is a sufficient fall for it; if the pipes are large enough to carry off accidental stoppages; and above all, if there are syphons placed to prevent the return of bad gas. Without these no drainage is perfect. It is often difficult to ascertain the exact truth as to these facts from the landlord, or from previous inmates; but on entering upon the occupancy a little attention to the smells of the house will suffice to prove whether all is right or not. The landlord is bound to keep the drainage in order, and an appeal (if he refuses) to the inspector of nuisances will shortly set all right. But we warn the housewife that she must herself be careful that the servants do not pour cabbage water down the back kitchen sink; as the smell of it—a singularly unpleasant one—is so strong that it will penetrate all over the house, and produce the suspicion of a bad drain. The water in which any kind of cabbage has been boiled, should be thrown away out of doors, in a distant corner of the garden, if possible; chloride of lime dissolved in water should occasionally be poured down the drains also, to secure disinfection of all kinds.

Miss Nightingale says, " It would be curious to ascertain by inspection how many houses in London are really well drained. Many people would say surely all or most of them. But many people have no idea in what good drainage consists. They think that a sewer in the street, and a pipe leading to it from the house is good drainage. All the while the sewer may be nothing but a laboratory from which epidemic disease and ill health is being distilled into the house. No house with any untrapped drain-pipe communicating immediately with a sewer, whether it be from water-closet, sink, or gully-grate, can ever be healthy. An untrapped sink may at any time spread fever or pyæmia among the inmates of a palace.*

" The ordinary oblong sink is an abomination. That great surface of stone, which is always left wet, is always exhaling into the air. I have known whole houses and hospitals smell of the sink. I have met just as strong a stream of sewer air coming up the back staircase of a grand London house from the sink, as I have ever met at Scutari ; and I have seen the rooms in that house all ventilated by the open doors, and the passages all *un*ventilated by the closed windows, in order that as much of the sewer air as possible might be conducted into and retained in the bed-rooms. It is wonderful !

"Another great evil in house construction is carrying drains underneath the house. Such drains are never safe. All house-drains should begin and end outside the walls."

Ventilation is of as much importance as good drainage. The air we breathe contains the principle of life or death. Oxygen, or pure air, is life-giving ; carbonic acid (or impure air) is fatal to animal life.

The free circulation of air prevents the accumulation of the vitiated particles which form carbonic acid, and thus increases the amount of oxygen.

The danger of breathing impure air is great. It is carbonic acid (a state of bad air) which frequently kills the miner, or the man who descends into a well ; it is the carbonic acid in the air of crowded rooms, or churches, which causes head-ache and drowsiness, for it is a narcotic poison, and from it also (tainted with other impurities) come the fatal fever, cholera, and many other kinds of infection. Every room, therefore, should be well ventilated, especially sleeping-rooms, which should never be used unless there is a fire-place in them, or a panel of perforated zinc in the door. We will explain why :—The breath of each person occupying a room corrupts a certain portion of air. A part of the air imbibed by breathing is returned by the exhaled breath in the form of carbonic acid. Thus gradually, if there be no ventilation or circulation of fresh air in the room, the whole atmosphere of the chamber becomes poisonous and sometimes fatal, producing death in sleep—a kind of apoplexy, or if it is survived, generating afterwards putrid fever.

It was the carbonic acid exhaled from their own lungs, and not dispersed

* "God lays down certain physical laws. Upon His carrying out such laws depends our responsibility (that much abused word), for how could we have any responsibility for actions, the results of which we could not foresee—which would be the case if the carrying out of His laws were *not* certain. Yet we seem to be continually expecting that He will work a miracle—*i.e.*, break His own laws expressly to relieve us of responsibility."

by ventilation, which killed the unhappy prisoners of the Rajah of Bengal in the Black Hole of Calcutta, as the small chamber in which they were confined was called. It is carbonic acid *settled* on the floor of the Grotto del Cane, in Italy, which stupifies the poor dogs sometimes driven into it; it is carbonic acid settled in the jungle—through which no wind can penetrate—that kills men and beasts in the fatal Valley of Death in Java; and the same deadly foe to life and health exists in every ill-ventilated and over-crowded house. Let us therefore, if we would be well and happy, carefully supply our apartments with pure air by ventilation—opening windows and keeping the register of the fireplace open.

We must here observe that the eye of the mistress is especially required to secure that the stove-registers are left open when no fires are in the grates. Housemaids almost invariably shut the register when fires are not lighted, and many a headache and morning drowsiness may be traced to the fact. The unconscious occupant of a chamber falls asleep in a room with closed shutters and door, and shut-up grate; gradually his breath poisons the air, and, if the room be small, he has before morning absorbed into his blood (by re-breathing) the tainted air which carries in it the seeds of disease. An open register admits fresh air to replace that which is vitiated by breathing. If air enters by chinks or keyhole, the draught will be *towards the fireplace;* therefore care should be taken not to place the bed *between* the fireplace and a door or window.

A fire in a room is a great purifier of the air, and when it can be afforded should be used in bedrooms.

There are always two currents of air in a room; one of hot air flowing *out* of the room, and another of cold air flowing *into* the room. This may be proved by holding a lighted candle near the top of the door. You will perceive on doing so, that the flame will be blown *outwards* towards the hall or passage. But if you hold the candle at the bottom of the door the flame will be blown *into* the room; this is not the case when there is a fire in the room; *then* an *inward* current is drawn through all the crevices.

Heated air always ascends towards the ceiling, and floating about in the upper part of the room, escapes through any opening or crevice to be found there. The empty space (vacuum) left by the ascent of the hot air is instantly filled by the outer and colder air rushing in. This cold air drives or presses the hot air out. Thus the reader will perceive that to free the air of a room from impurity the windows should be opened *at the top*,—to cool a room the windows should be open *at the bottom*, that is, the lower sash should be raised, as the cold air will rush in there. The upper sash must be opened for ventilation.

There is no draught from the open upper sash, as thought; the warm and bad air rushes out of it. There is a considerable draught from an open lower sash, as through it cold air is rushing into the room. This fact is very important to be known by those who are nursing invalids.

A ventilator is absolutely necessary when gas is burned in the room.

We add here a paper on ventilation, by an eminent surgeon whose instructions may be taken as authoritative.

VENTILATION.

The ventilation of dwelling-houses, although as important as that of churches and other buildings in which large numbers of people congregate, has, however, been almost entirely overlooked until lately, or has been allowed to take quite a subordinate place in the architect's plans. Gas illumination having in a great measure superseded that of candles and lamps, it becomes a more urgent necessity to provide some means for carrying off the products of combustion. These products are more complex and more dangerous for respiration than those from candles and lamps ; yet modern houses, although generally furnished with gas-fittings, are built without any provision for a supply of fresh air, or for the carrying off of the foul air. It is an established physiological law that no room should afford less than a thousand cubic feet of air for each person in health, under the ordinary conditions of inlet and outlet ; for the sick-room not less than one thousand cubic feet should be allowed to each patient. This quantity of space is the least that is allowed for patients in the large hospitals recently erected. There is one simple principle that should guide all contrivances for ventilation purposes—viz., to secure a constant change of the atmosphere.

Thorough change of the air of a chamber involves the admission of pure air on the one side and the removal of the vitiated air on the other.

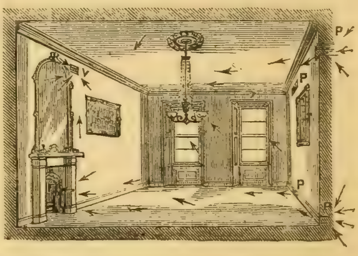
In ordinary rooms, this is imperfectly effected by the fireplace, and by the imperfect closure of door and window frames. It is, perhaps, a source of some consolation that the very imperfection of modern domestic architecture offers some degree of immunity from the consequences of breathing air that is vitiated, either by the lungs of human beings, or by the combustion of gas. We have heard modern houses, in this respect, described as patent self-acting ventilators.

This haphazard mode of ventilation is unscientific and insufficient, being effected only by draughts of air which cannot always be borne without risk to the health. To secure the thorough change of air that has been spoken of, a *good ventilator* should be placed in the chimney, or some part of the wall communicating with the outer air if there be no chimney. As nearly as possible opposite to the ventilator a flow of pure air should be secured at the top of the room as well as near the floor. If only admitted in the latter position, the heated impure air will collect at the top of the room under the ceiling, and gradually intermingle with the air below. By a little skilful management of the cornice, or other ornamentation along the top of the wall of the room, concealed perforations may be made that shall admit a flow of pure air which will mingle with that which may also be admitted in like manner by concealed perforations in or behind the skirting-board.

If there be a fireplace in the room, a very free admixture of these two air-supplies will take place before they reach the fireplace, which they will surely do by virtue of the suction power of the heated air in the chimney.

It may here be stated that in the summer time, when fires are not being used, there is a draught up the chimney, as may be seen by holding a lighted taper at its mouth. A downward current may in the winter time be obtained by the same means, from a chimney in which there is no fire.

We have said that a *good* ventilator is an essential part of the system for complete ventilation of a room. A ventilator to be perfect should be self-acting with the current of air. Arnott's are hung on an erroneous plan, the reverse of what they should be. Being fixed on a hinge at the lower border, the valve requires a counterbalancing weight to make it swing with the current of air, whereas if it be suspended from its upper edge at a proper angle, and be made of some light material, as talc, it will open with the slightest upward flow, and be effectually closed by the reverse movement, the downward current of the air. The valve by this arrangement prevents the back escape of smoke into the room, and secures the exit of the vitiated air. This form of ventilator will act equally well with or without the presence of a fire in the grate. They are also made so as to serve for the ventilation of halls and other public buildings.



A great mistake is often made in warming rooms by gas burners. More particularly is this objectionable in a sick room, where pure air is required more than anywhere. If any one will take the trouble to notice, he will find that, on going from the fresh air into a room in which gas is burning (without sufficient ventilation, or a flue to carry off the vapour), there will be distinctly perceptible a more or less pungent smell of sulphurous and other vapours. Where therefore gas is used for the purpose of warming, the warmth is obtained at the cost of the purity of the air. An open fireplace is not only a source of warmth, but it is also a means of ventilation and purification of the air.

HIRING HOUSES.

Houses may be hired for any period. By agreement for three years, or by leases of 7, 14, or 21 years, or by the week, month, quarter, or year, if the landlord chooses. The rent for the lease is generally lower than the rent for a three years' term. The three years' occupancy rent again is generally less than that paid by the year. The drawing out of a lease is very expensive, never, we believe, much less than 8*l.*, and frequently more. There is nothing paid for the form of an agreement for three years, or at least not more than a guinea.

A tenant for a long lease generally agrees to do the repairs, and to paint the house inside and out, at certain fixed periods. Unless there is an express agreement in the lease to the contrary, a tenant is bound to pay his rent even after his premises have been destroyed by fire. Even if the landlord has insured the premises against fire, the tenant will still remain liable for the rent if they should be burned down, and he cannot compel the landlord to rebuild. But if the landlord has entered into a covenant or agreement to keep the house in good and tenantable repair, and it be burned down, or otherwise destroyed, though at law the tenant would still remain liable for the rent, in equity, it is submitted, he would be entitled to relief during the time the premises remained uninhabitable. As repairs are generally undertaken by the

landlord in a three years' agreement, it is manifestly safest we think to take a house for that period, rather than on a lease, even allowing that the rent should be a little higher than for the latter. But without a special agreement, the tenant is still liable for the rent after the house is burned down. To avoid this risk a householder may insure for his rent yearly at any Insurance office. Then, if he is burned out, the office pays the year's rent.

A tenant is not bound to repair damages by tempest, lightning, or inundation.

If the landlord agrees to repair, and fails to do so, the tenant or lessee may do the repairs himself, and deduct it from the rent.

If a lessee remains in his house after the expiration of his lease, he is liable for rent accruing after the termination of the lease. If he is allowed to remain in possession without renewing his lease, he is called a tenant by sufferance, and pays the same rent which he was charged during the lease. On the landlord's accepting any rent after the lease has terminated, the tenant becomes a yearly tenant, and must receive a half-year's notice to quit. No notice to quit is necessary when the house is held for a fixed period—as three years—the tenancy expiring with the time. But if the tenant be a yearly one, (and all who have not agreed to take their houses for a fixed period are held to be yearly tenants,) notice to quit must be given six months before the expiration of the year, so that the notice may expire on the very day the tenant entered into possession of the dwelling:—for example, if the house was taken December 25th, notice to quit must be given on June 24th, and the tenant must leave at the date he entered. If a house is taken by the quarter, a quarter's notice to quit must be given; if by the month, a month's notice; if by the week, a week's notice. Yearly rent is paid quarterly—*i.e.*, on March 25th, June 24th, September 29th, December 25th—and may be demanded on any of those days between sunrise and sunset; but few people pay their rent to the day. It is usually settled during the following week, and (if collected) is seldom sent for under three weeks from the day. Weekly rent is paid weekly; if suffered to run on to the quarter the tenant becomes a quarterly tenant. The rates and taxes paid by the landlord are, property tax—land tax—ground rent, and sewers' rates, which the tenant pays for him, but deducts from the rent during the current year. Most frequently however, the landlord stipulates in the agreement that the tenant shall pay the sewerage rates. The house tax is paid by the tenant, and is, on farmhouses occupied by a tenant or servant, and on houses in which articles are exposed for sale, 6*d.* in the pound—on private dwelling houses, 9*d.* in the pound.

The parish rates (except sewer rates) are all paid by the tenant.

Notice to quit should be given in writing, to save possible blunders, though verbal notice is sufficient, if there is a witness to prove that it was given, and that it was sufficiently explained.

The following is the form for giving notice to quit:—

SIR,—I hereby give you notice that I shall quit the house (or apartments) which I hold of you in —— street (at the rent of £ —— per ——), on —— day of —— 18—. Your obedient Servant,

Address to landlord by his name and abode.

The incoming tenant of a house should be careful, before he takes possession, to ascertain whether the arrears of rent, ground-rent, taxes, and rates have been paid. He should also be certain when he pays the outgoing tenant for any fixtures, that they are not the property of the landlord.

The state of repair of the house should be carefully ascertained. All broken panes of glass should be repaired; or, if cracked, a note should be taken of the fact, otherwise they will be charged to the tenant on giving up possession. Symptoms of damp should be observed. It may be detected by stains on the wall-papers or whitewash.

He should also see that the sash-lines of the windows are not worn, and that bolts, locks, shutters, etc., are in good order; that the bells ring; that the floors are level (for if they are not the edges of the planks will destroy the carpets), and that there are no gaps between the boards, nor round the skirting-boards. If Venetian blinds are left in the house, they should be carefully examined before purchasing them. He should try if the water-taps are right, and ascertain whether the water is on the main, or only let in at certain hours of the day; whether the cisterns are indoors or out, and of what materials they are made. A leaden tank or cistern is dangerous; it should be lined with slate, and covered to keep dust and bad smells from the water. An out-door tank is likely to get frozen in winter, and when it thaws a bursting of pipes is to be apprehended.

In short, no pains should be spared to ascertain that the house is as perfect as may reasonably be expected before entering on its tenancy.

TO PURCHASE A HOUSE.

Purchased houses are either freehold, leasehold, or copyhold. Of these, a freehold is greatly to be preferred. It becomes, by purchase, the property of the purchaser for his life, with power to will it away at his death. Any improvements made by him on it increase the value of his possession, and are not only for temporary enjoyment, but become actual investments.

A leasehold, on the contrary, can only be bought for a fixed period of time, longer or shorter, and at the end of that time reverts to the original owner or *lessor*. Long leases falling in, after the property by improvements of tenants or other causes has grown valuable, frequently enrich the descendants or heirs of the lessors.

Copyholds are held by lives being placed on them. For example:—

Three lives may be put on the house; if all three fall in, the lease lapses to the lord of the manor, and is lost to the lessee. Consequently, every life failing by the death of the individual must be replaced to preserve the property. The putting in a new life is a very expensive affair. It is well, therefore, to insure the life placed on it in case of accidental mortality; young and healthy lives should also be chosen for this purpose. But this kind of house property must be looked on as a bad investment.

With all these objections, there may yet be good reasons at times for purchasing a leasehold house. If the lease be for 70, 80, or 99 years, and to be had cheaply by the payment of a moderate ground-rent, the present outlay may be compensated by the house costing less yearly than the purchase of a freehold would involve. All leases with uncertain fines should be avoided. A short lease seldom pays.

The title-deeds of a house should be carefully examined before it is purchased; indeed, no one should buy a house without employing a lawyer to look at them first.

The expenses of conveyance must be calculated as forming an item in the outlay for purchasing a house. They are much greater for freeholds than for leaseholds.

All fixtures put up in a leasehold house belong to the lessor or original owner, and cannot be taken away at the expiration of the lease, unless otherwise specified. No fixture in the soil, out-house, or fold-yard can be taken away; no wainscot, doors, floors, etc., can be removed; but a tenant may remove any conveniences fixed up for the purposes of his own trade, as counters, engines, brewing utensils, etc.; the removal taking place before the expiration of his lease.

Chimney-pieces, pier and other glasses, cupboards, bookcases fitted in recesses or against the wall, and wainscot (if it is not nailed but put up with screws) may be removed.

An outgoing lessee must be careful to leave the house in good repair, as he is otherwise exposed to an action for dilapidations, which might cause him great expense and trouble.

Before purchasing a house it is well to have it carefully examined by a surveyor, in order to ascertain that the walls are thoroughly waterproof, that the roof is in good repair, and the drainage perfect; also that the roof shall not be one which will retain snow, or compel the sweeping it away with difficulty. An exit to the roof is desirable for this purpose, as well as for an escape in case of fire.

The chimneys should be tested, in order to ascertain whether they smoke or not; indications of this miserable defect may be seen in the house, *unless* it has been painted and papered since its last tenant left.

"A dark house is always an ill-aired house, always a dirty house," says Miss Nightingale, in her invaluable "Notes on Nursing;" "want of light stops growth, and promotes scrofula, rickets, &c., among the children. People lose their health in a dark house, and if they get ill they cannot get well again in it. . . . . . One of the greatest observers of human things (not physiological) says, in another language, 'Where there is sun there is thought.' All physiology goes to confirm this. Where is the shady side of deep valleys, there is cretinism. Where are cellars and the unsunned sides of narrow streets, there is the degeneracy and weakliness of the human race—mind and body equally degenerating. Put the pale withering plant and human being into the sun, and, if not too far gone, each will recover health and spirit. . . . . . People think the effect of sunshine is upon the spirits only. This is by no means the case. The sun is not only a painter but a sculptor. You admit that he does the photograph. Without going into any scientific exposition, we must admit that light has quite as real and tangible effects upon the human body. But this is not all. Who has not observed the purifying effect of light, and especially of direct sunlight, upon the air of a room? Here is an observation within everybody's experience. Go into a room where the shutters are always shut (in a sick room or a bedroom there should never be shutters shut), and though the room be uninhabited, though the air has never been polluted by the breathing of human beings, you will observe a close, musty smell of corrupt air, of air—*i.e.*, unpurified by the effect of the

sun's rays. The mustiness of dark rooms and corners, indeed, is proverbial."

The Italians have the following truthful proverb :—

> "Dove non entra il sole
> Entra il Dottore."

"Where the sun does not enter the doctor does." Dwelling in so cold and moist a climate as we do, it would be well if builders were taught this truth from the sunny South. It is better, therefore, to choose a house the aspect of which is east and west; most assuredly no one who can possibly avoid it should hire or purchase a house with a northern aspect, unless the chief sitting-rooms face south and are very open to it. Air *through* the house, and sun-light on three or two sides, are the conditions of health.

Suppose that the householder, as is sometimes the case, has no choice of his dwelling, he may still do something to improve it. Say it has damp walls, the following suggestions from that excellent paper *The Builder*, may be followed with advantage :—"Remove the whole of the damp plaster down to the surface of brick or stone walls, rake out the joints, clean and well wet the surface; lay on a coat of good Portland cement, mixed with one-sixth sand; be careful to cover every part of the brick or stone; broom or otherwise roughen the surface of the cement while soft; let this stand a few days, to get a hard skin on it, then re-plaster in the usual way. It will not do well to finish the inside surface with Portland cement, as condensation will take place on the surface in damp weather. If speed in execution be desired, the surface may be finished with plaster of Paris, Keene's Parian, or Martin's cement, with the usual proportion of sand."

A wash of boiling oil over paint is also an excellent method of keeping out damp.

Sometimes the dampness proceeds from the spouts being foul, and overflowing, or from a leakage in the *inner* side of one of them. They should be looked to, repaired and *cleaned out;* the latter process is imperative occasionally, as birds build in spouts and collect immense quantities of rubbish in them; the water not finding a free passage runs over and damps the walls.

Preparation for Damp Walls.

Nitric acid, 4 ounces; sulphuric acid, 4 ounces; spirits of turpentine, 3 ounces; muriatic acid, 3 ounces; stove sal ammoniac, 1 ounce. Mix to a consistency of colouring in 8 pounds of lime with hot water, and apply when the wall is least damp with a whitewash brush.

BUILDING A HOUSE.

Miss Edgeworth calls proverbs "the wisdom of nations." If her assertion is correct, the said wisdom has decided strongly against building a house for one's own habitation.* Nevertheless, there *are* people who, looking at

* Proverb :—"Fools build houses for wise men to live in."

the present rapid and certainly very imperfect development of houses which are built "to let," feel inclined to try what they can do to secure for themselves a well-built dwelling, which will not be in a chronic state of disrepair. There is something to be said on their side; but when such a resolution is taken, and outlay is not a matter of consideration, we recommend the amateur builder *not* to be his own architect, but to employ a good practical professional architect, who will listen to any suggestions he may care to make, and be willing to carry out his plans if they are judicious. A good and respectable builder is then necessary. It is better to contract for the building with him, at a fixed price and specified time, as no amateur builder ever yet calculated exactly the expense of bricks and mortar, and many men have been ruined by over-building themselves.

The architect will submit a plan of the house, which should be carefully studied before it is accepted; and great consideration should be given as to the facilities for draining, the admission of sunshine into the rooms, and the proper ventilation. While the house is building, the future owner should keep an eye on the building to see that the bricks are new and water-tight, that the foundation is deep enough, that the drainage-fall is sufficient, and that the pipes and syphons of drains are well cemented together. The want of cement in drain-pipes often causes an escape of noxious air from them, or, should it occur in the gas-pipes, of gas. He should also see that the woodwork is well done. The respectability of the builder employed will guarantee that the wood is well-seasoned—unseasoned wood will crack and shrink and be a perpetual annoyance and trouble if it is used for skirting-boards, doors, etc. etc. The floors should also be looked to: if the planks are not laid evenly and smoothly the edges will cut the carpets out; if they are not well fastened down also, they will create unpleasantness. The proprietor should also take care that the staircase is well lighted, as nothing is more disagreeable than dark stairs.

For persons of small property there are Building Societies, which furnish the means of purchasing or building a house by weekly instalments of payment or yearly subscription, and also are useful as modes of investment for small weekly sums.

LODGINGS.

Furnished lodgings are generally hired by the week; unfurnished, by the year or quarter. Payments are made according to arrangements between the householder and lodger.

One of the greatest objections to living in lodgings has been removed by the recent Act to protect lodgers' goods. Formerly, if the householder did not pay his rent to the superior landlord, the lodger's goods could be seized for it. The new Act remedies this injustice. By it a lodger, if a distress is levied, is to make a declaration that the immediate tenant has no property in the goods distrained. Annexed to the declaration is to be a correct inventory, and if the lodger shall subscribe the declaration or inventory knowing either of them to be untrue in any material particular, he shall be deemed guilty of a misdemeanour. If after such declaration and inventory, and after the lodger has paid or tendered the rent, if any

due, the superior landlord shall levy a distress, he shall be deemed guilty of an illegal distress, and the lodger may apply to a police-court for an order for the restoration of such goods; besides which, the superior landlord is to be liable to an action at the suit of the lodger, in which action the truth of the declaration and inventory may likewise be inquired into. The Act is not to extend to Scotland.

Papering and Painting the House.

Papering a house is a subject for great consideration before furnishing it. Very generally the landlord of a dwelling-house allows the incoming tenant to select his own papers at a fixed price. If the tenant wishes for a more expensive paper he can have it, of course, by paying the extra expense.

In selecting the paper-hangings, judgment and taste are necessary.

We should always recollect that wall papers are the same (or ought to be) as the background to a picture. They should *not* therefore be such as will attract attention to themselves especially; they should be *subdued* in effect, with no strong contrasts of colour, or of shades of dark and light. Nothing should disturb the sense of flatness on the wall. The tints should be simple, the objects represented on it should be conventionally *flat*.

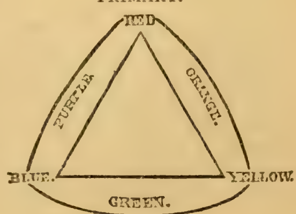
While the decorative details should be arranged on symmetrical bases, these should be so resolved into the minor forms as not to be obtrusive. Prominent colours should be broken over the whole surface, so as to give a general negative hue. There should be no masses of prominent colour.

If the householder already possesses furniture, regard must be had in selecting the papers, to the harmony of their colours and style with those of his furniture, carpets, and curtains.

The effect of colour in producing beauty is not half understood by people in general. An apartment in which the harmony of colour is perfect, although the furniture in other respects may be of very moderate goodness, will far surpass in effect a gorgeously or handsomely furnished room in which the effect of the mighty enchanter COLOUR has been set at nought. A right blending or harmonizing of hues, or judicious contrasts, can only be attained, however, by some artistic knowledge, or by that instinctive taste possessed by some persons. A few words on colour may not be unwelcome to our readers, while on this subject.

There are generally said to be three *primary* colours—red, blue, and yellow. Any two of these mixed will form a *secondary* colour; for example, red and yellow combined give orange; yellow and blue, green; blue and red make purple. Each primary colour has its complementary colour in the other two mixed together. Thus, for the primary RED, yellow and blue combined furnish the complementary colour green; in blue and red, which produce purple, we have the complementary of YELLOW. In the union of red and yellow making orange colour, we have the complementary of BLUE. Of course it is clear that

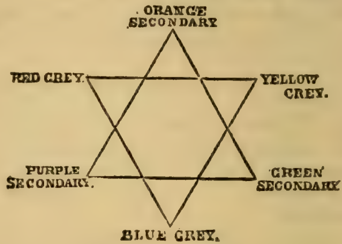
PRIMARY.



the complementary colour of the secondary or mixed colours must be the primaries themselves.

PRIMARY AND SECONDARY COLOURS.

SECONDARY AND TERTIARY COLOURS.



In practice, therefore, we are sure of harmony of tint between blue and orange, purple and yellow, green and red.

The secondary colours form by their union the *tertiary* colours, which are greys—sometimes distinguished as russet—citrine, and olive. These also have their complementary colours ; a *red* grey will be complementary to a green, a blue grey to an orange, a yellow grey to purple.

Colours are modified by mutual neighbourhood, some becoming dulled, some more resplendent by the reaction on themselves of the colours next to which they are seen. This fact was long known, but the law which controlled them was discovered by M. Chevreul, director of the Gobelins tapestry manufactory.

He asserted that the phenomena of colour contrast fell under two classes—the contrast of colours *simultaneously* seen, and the successive contrast of colours seen one after the other in time. It is to the former class that the most important questions regarding domestic art belong, and the law which governs this class of contrasts is simply this—*that when the eye sees at the same time two colours which are in near neighbourhood, they will appear as dissimilar as possible.*

Chevreul asserts that there are six distinct modes in which colour harmony may address itself to our minds, and that these may be classed under two heads—the harmony of *analogous colours*, and the harmony of *contrasts.* Under the harmonies of analogy he classes

First Kind.

Harmonies of Analogous Colours.

1. *The harmony of scale*, produced by the simultaneous view of different tones* of a second scale, more or less approximating.

2. *The harmony of hues*,† produced by the simultaneous view of tones of the same height or nearly so, belonging to scales more or less approximating.

3. *The harmony of a dominant coloured light*, produced by the simultaneous view of different colours assorted conformably to the laws of

* Pure tints modified by black or white.

† Hues are formed by the modification of any pure colour by small amounts of some other colour.

contrast, but one of them predominating, as would result from seeing these colours through a slightly stained glass.

Second Kind.

Harmonies of Contrasts.

1. *The harmony of contrast of scale*, produced by the simultaneous view of two tones of the same scale, very distant from each other.

2. *The harmony of contrast of hues*, produced by the simultaneous view of tones of different height, each belonging to contiguous scales.

3. *The harmony of contrast of colours*, produced by the simultaneous view of colours belonging to scales very far asunder, assorted according to the law of contrast : the difference in height of juxtaposed tones may also augment the contrast of colours.

Chevreul names blue and orange as good contrasts ; violet and yellow, red, with white or black, in juxtaposition.

Colours placed in juxtaposition effect a modification in tint or hue on each other. Place blue and green of nearly the same height of tone side by side, and you will perceive that the blue will look less greenish and become more violet, and the green will take an orange tinge.

" Under similar conditions an orange and a red mutually affect each other, and pass respectively towards yellow and crimson. Even two white stripes by the side of two black, or even two grey stripes matched with two brown ones, undergo severally, and severally induce, a change, the tone of the grey or the brilliancy of the white being heightened, those of the brown and of the black being in a corresponding degree lowered by the mutual neighbourhood of these different stripes. It is then a phenomenon affecting tone (*i. e.*, relative depth of greyness) as well as tint (*i. e.*, relative quality of colour). Furthermore, black, white, or grey, placed in juxtaposition with coloured stripes, exhibit changes, the character of which can be readily anticipated by reference to Chevreul's law. Thus white with red mutually produce difference both in tone and tint. The high *tone* of white (absolute whiteness being the greatest height of tone to which all colour can approximate) reacts on the tone of the red lowering it. The *colour* of the red reacts on the colourlessness of the white, impressing this with a slight tint of the colour most different from the red—that is to say, the complementary colour to the red, namely, green. Thus red and white become respectively a deeper toned (darker) red contrasted with a slightly greenish white. Thus, too, black and red become a very faintly greenish and much less rich black and a more white (lower toned, paler) red. The hue variations become marvellously distinct in a well-chosen grey whose tone is commensurate with that of the colour juxtaposed to it. Here, the modification of tone not affecting the relative brilliancy of the colour and the grey, the former impresses on the latter its complementary tint, so that a red will render a like-toned grey quite perceptibly green, itself becoming of a purer redness, while a blue similarly brightened will impart to it a decided orange. Greys slightly tinted with any colour have that colour in a surprising way intensified by juxtaposition with its complementary, so that a bluish grey will become almost a decided blue in the neighbourhood of orange."*

* *Fraser's Magazine*, Nov. 1855.

These hints on the art of colour may be (if carefully thought out) of some service to the housewife furnishing. She should see that the stuff which covers the cushions of her rosewood chairs is of a colour adapted to set off the wood; and then be careful that this colour is in harmony (whether by contrast or judicious analogy of hue) with the wall-paper, the curtains, and the carpet; and that the various hues and tones of these are borne out by tints and hues on cornice and wainscot which will harmonize with the whole, giving an effect of a blooming light to the room, which has a peculiar, and to the uninitiated in art a mysterious charm of its own.

The greys will be found of great service contrasted with their complementary colours, and *shades* of the same colour are also pleasant to the eye. In papering, forethought regarding the furniture to be placed in the room must constantly be exercised. The bloomy papers, all of one tint, with gold mouldings or panellings always look well, if the colour be chosen with regard to that of the carpet, curtains, and general style of furniture. But fashion regulates the style of papers, with or without the "dado."

We have insisted elsewhere in this volume on the beneficial effect of LIGHT. *Colour* has been said by one of the wisest and most practical of Englishwomen to be, like light, a physical boon as well as a thing of beauty.

"The effect in sickness of beautiful objects, of variety of objects, and especially of *brilliancy of colour*," says Miss Nightingale, "is hardly at all appreciated.

"Such cravings are usually called the 'fancies' of patients. And often doubtless patients have 'fancies,' as, *e.g.*, when they desire two contradictions. But much more often, their (so called) 'fancies' are the most valuable indications of what is necessary for their recovery. And it would be well if nurses would watch these (so called) 'fancies' closely.

"I have seen, in fevers (and felt, when I was a fever patient myself) the most acute suffering produced from the patient (in a hut) not being able to see out of window, and the knots in the wood being the only view. I shall never forget the rapture of fever patients over a bunch of bright-coloured flowers. I remember (in my own case) a nosegay of wild flowers being sent me, and from that moment recovery becoming more rapid.

"People say the effect is only on the mind. It is no such thing. The effect is on the body, too. Little as we know about the way in which we are affected by form, by colour, and light, we do know this, that they have an actual physical effect.

"Variety of form and *brilliancy of colour* in the objects presented to patients are actual means of recovery."*

If colour and beautiful objects have this effect on the sick, how can we doubt but that a beautiful room, bright, or soothing from the effect of colour, will have a good and wholesome effect on those who are in health.

How much of ill-humour, depression, and craving for excitement may be caused by a dull, dark room, without a ray of beauty in the shape of colour or form to enlighten it.

Let your walls then be painted or papered with harmonious colours; or if, unluckily, you have no choice, and the dull, heavy, drab paper, or one of

* Miss Nightingale's "Notes on Nursing."

violent and vulgar colouring disfigures the room, try to enliven it or to tone it down, as required, by your curtains and furniture, or by bright water-colour drawings for the first, or engravings with dark or oak frames for the other. Though, really, a pretty paper may be had cheaply enough, and the expense is as nothing compared with the benefit conferred by it. But of some delicate attractive tints it is necessary to beware. The apple-green papers are coloured by means of arsenic, which is likely to fly off into the air of the room and slowly poison its inmates. The writer remembers that, as a child, she was always conscious of a feeling of discomfort and sleeplessness in a green bedroom; and that she was said to be fanciful and too imaginative, from the intense dislike she took in consequence of this feeling to green rooms. Science has since become popularized, and her childish distaste is proved to have had a very real and serious cause. A personal friend of hers will never again be quite strong from having slept for a long time in a bedroom papered with green. A suspicion of the truth having been roused by our discussing the question of papers, the one covering her bedroom wall was tested, and the doctor declared her singular illness was actually slow arsenical poisoning from the particles which floated on the air from the paper. Another friend of ours—a gifted artist—once suffered from almost a fit, caused by the same thing. Fortunately he only passed one night in the fatal chamber, the paper of which was pulled down by order of his hostess the next day.

With regard to health, Miss Nightingale says, "As for walls, the worst is the papered wall; the next worst is plaster. But the plaster can be redeemed by frequent lime-washing; the paper requires frequent renewing. A glazed paper gets rid of a good deal of the danger. But the ordinary bedroom paper is all that it ought *not* to be.

"The close connexion between ventilation and cleanliness is shown in this. An ordinary light paper will last clean much longer if there is an Arnott's ventilator in the chimney than it otherwise would.

"The best wall now extant is oil painted. From this you can wash the animal exuviæ."

Bedroom papers should be light, they should not be of patterns which tempt the gazer on them to *count them.* I mean that alternate rows of bunches of flowers or fanciful shapes in very regular order, should be avoided. The sleeper awakened should not have rows of figures on the wall which tempt him to count six, seven, twelve, thirteen, as we are all conscious of having done. This is very disturbing, and as it is always possible that an invalid may occupy the bedroom, it is to be avoided.

Next as to warmth or coolness of colour.

Dark colours are warmer than light ones, because they absorb heat from the sun more than light ones do. This can be proved by experiment, and is indeed instinctively acknowledged by us all. Red is a warm colour. White gives coolness. We give the order of degrees in which the colours stand as regards heat.

1. Black—warmest of all.
2. Violet.
3. Indigo.
4. Blue.
5. Green.
6. Red.
7. Yellow.
8. White.

Now the rooms in our houses have, of course, different aspects, varying as to heat. A northern aspect never gets much sunlight, or all it does get is very early morning sunshine in the heat of summer. To live in rooms or a house which has *only* a northern aspect, or in which the chief rooms all look north is a mistake, as we have before said. Nevertheless, we may find in some corner of even a sunny house a north room to paper. Let us recollect that it will be nearly sunless, and provide a light-radiating paper for it. Red is warm. *Light* red would be bright and cheerful. White would be best as to light-giving, but then it looks cold ! Could we not choose a paper of the two mixed ? The white ground with bright red figuring on it ? In a north room the paper and furniture should be both brightly coloured. Blue is also pretty for a north room.

A warm south room will be the better for a white paper, or one of the grey green tint, which is not arsenical. Yellow is a restless colour in which the eye feels a want of repose. Yet amber—one of its shades—is very effective in a drawing-room facing north.

Let our readers remember that papers on walls retain a great deal of the dust which passes over them, and require dusting as much nearly as furniture does. They also retain infection; after scarlet fever or small-pox the walls of the sick chamber should be repapered, and the paint and whitewash of the ceiling re-done. Be careful also, that when your rooms are papered the old paper is first removed—this is essential to perfect purification of the apartment.

The paint in a house should harmonize with the paper and the furniture. With a pale grey-green paper, the doors and skirting boards should be painted pale green. With paper of a rosy hue, pale strawberry colour ; or the finer maple-wood should be imitated in a drawing-room. Panels picked out in gold, and gilt mouldings, are great improvements, and where expense is no object, tinting the moulding of the ceiling is very desirable ; soft shades, light and dark, of grey are very effective, and tints of colour blended with them are often beautiful.

Dining-rooms are better painted than papered. Fashion assigns them at present darker paper than the other rooms. In London, and for north rooms, this is a mistake, as it occasions a diminution of size to the eye, and a gloom and deficiency of light. If painted, a light colour would of course be employed, and this alone is an advantage ; not to speak of the avoidance of fumes of dinner, which hang about a wall paper. We have two charming dining-rooms at this moment in our " mind's eye "—one painted pale green, with curtains of the same hue, but of a darker tint—the ceiling picked out in green grey and pale greens ; another of a tint of indescribable salmon colour, with a crimson carpet, and curtains of a darker hue, yet retaining a due harmony of tint.*

To get rid of a Bad Smell in a Room newly Painted.

Place a vessel full of lighted charcoal in the middle of the room, and throw on it two or three handfuls of juniper berries, shut the windows, the

* For ordinary hired houses, paper alone is attainable, and a little judgment and knowledge of colour and its effects will help to render the dining-room pleasant and cheerful at a much lower rate of outlay.

chimney, and the door closely ; twenty-four hours afterwards the room may be opened, when it will be found that the sickly unwholesome smell will be entirely gone. The smoke of the juniper berry possesses this advantage, that should anything be left in the room, such as tapestry, etc., none of it will be spoiled.

FURNISHING.

A house painted and papered with taste has next to be furnished with taste.*

Where the means are large *and the taste good*, this may be easily achieved ; but it by no means follows that expensive furnishing is tasteful furnishing. Good taste may be shown at very small expense, and bad taste at a great cost ; but where the taste is equal, the means will largely assist the furnisher in making her dwelling beautiful.

The great improvement in art during the last twenty years has enabled us to obtain articles of exceeding elegance and beauty, and it is only necessary to have a just and pure taste to be able to delight the eyes and charm the mind in a modern home.

Where a purchaser is doubtful of her taste or knowledge in furnishing a mansion, it is wise for her to trust to those of a *very* first-class upholsterer, but it is pleasanter every way to be able to choose for oneself, and a little knowledge of colours, and study of works of art will soon improve an uncultivated taste. Bad taste is shown in a jumble of many gaudy tints—too much gilding—too many mirrors—an overcrowding of furniture—furniture of size disproportionate to that of the room—an air of stiffness and unoccupancy. No expenditure can atone for any of these defects.

THE ENTRANCE-HALL.

The hall may, in the country, rejoice in sylvan trophies of the chase—antlers—the fox's head and brush ;—old carved oak cabinets may fill in recesses, and within them may repose a collector's treasures. The carved oak chairs and table, the umbrella-stands *like them* in material ; the blazing open grate in winter, the same full of bunches of evergreens or large pots of hydrangea or azalea in summer, frequently renewed, may make it a pleasant place to linger in. In London there is a conventional type of table, seats, stands, etc., which must necessarily be followed, chiefly for want of space.

Carpets.

The carpet of a room should have a quiet and negative effect, giving an impression of *flatness;* there should be no strong contrasts of light or shade in it. The leading forms should be composed so as to distribute the pattern over the whole floor, not up and down the breadths. The forms should be *flat,* without shadow or relief, whether derived from ornaments, flowers, or foliage. The ground should be of a negative colour, generally low in tone, and inclined to the tertiary hues—*i.e.*, the greys.

---

* Furniture may be hired for twenty per cent. on its value if quite new ; for example, if furniture, which to purchase would cost 150*l.*, is *hired*, you would pay 30*l.* a year for the hire. Secondhand furniture is let at *ten per cent.*

distinguished as russet, citrine, and olive;—leading forms of the pattern should be expressed by the secondary colours, purple, green, and orange —primary colours should be seen in small quantities. Such, according to the principles of true taste, should be a carpet; and the nearer we get to these suggestions the better the style of our rooms will be, but at present few carpets accord with these rules, and we are compelled to make the best choice that we can from those to be had.

Let us now see what are the different kinds of carpets, that we may judge of the value and expense of these necessary articles of English household furnishing.

TURKEY and PERSIAN carpets have a cut surface of wool, and are always made in oblong squares, with a border round them. They are suited for dining rooms, being warm to the feet, and bearing much wear and tear. Their colours are generally a rich and fanciful pattern of red, blue, and green, or yellow. When much worn, Turkey carpets may be shorn carefully, and will then be as good as new; they are expensive. Our AXMINSTER carpet is an imitation of the Turkey, but surpasses it in value and richness. The pile is thick, and the colours brilliant. This carpet also is very expensive. The WILTON and velvet pile carpets have a velvety surface, resembling that of the Turkey carpet, but they are finer and thinner, and the pile will not clip. They soon grow dirty, and look bad. BRUSSELS carpets are woven on a foundation of flax thread, but their pile is not cut as the Wilton is. They are called three-thread when each loop consists of three woollen threads, and two-thread when the loop consists of two only. These last carpets are cheaper, but do not wear well. An old Brussels carpet worn quite bare to the foundation will sell well, as it is then used for making oil-cloth on.

TAPESTRY carpets are woven like Brussels, of woollen threads, but they are dyed in short lengths, or now, we believe, stamped with colours. Their colours are much more brilliant than the Brussels, but they do not last well, and are not cheaper in the end, though they cost less at the moment of buying. Nevertheless, for a room not much occupied, they answer extremely well.

KIDDERMINSTER and SCOTCH carpets are woven all of wool, and have two sides, so that they can be turned, but they are of no substance, and soon wear and cut out. They do for bedrooms pretty well, but will not stand much wear.

DUTCH carpets are made on the same principle, but have a woof of flax—consequently they wear better.

VENETIAN carpet has a woof of flax, and a web of woollen threads, which shows on both sides. It is only used for strips by the bedside, or for stair-carpets.

DRUGGET is a coarse kind of woollen carpeting woven like flannel, which wears pretty well as a common carpet, but is chiefly used for covering better carpets. It is printed.

FELT is wool of a short staple matted together, not woven. It is printed, often very prettily, and catches the eye, but wears very badly indeed, the colours rub off, and it is soon useless.

COCOA-NUT MATTING is very durable and cheap. It is used for offices, halls, and kitchens, and is of all widths.

INDIA MATTING is made from grasses, and is used for covering carpets

in bedrooms and dressing-rooms on spots where the wear is very great—*i.e.*, before the toilet-table, washing-stand, etc.

FLOOR-CLOTH.—The foundation of this cloth is either of flax, or else the foundation of an old Brussels carpet—part flax, part wool. A strong oil-paint is laid smoothly over it in four coats, and the pattern is stamped on it. They are sold by the square yard.

OIL-CLOTHS are also a painted material, but on much finer and thinner canvas. The oil-paint finer, and pattern more delicate. They are used for table-covers ; but we object to them, as they destroy the varnish or French polish, under them. They are also used as squares under hip-baths to save the carpet from wet.

HEARTH-RUGS are made like Axminster carpets, with a foundation of flax, into which tufts of wool are woven, and then cut.

DOOR-MATS are of the like make, unless they are of skins tanned and dried. Hemp door-mats are used for the outer-door, as best suited to take off mud and dust.

We must say a word here about the rag-carpets manufactured by our American cousins. They are thus made :—

Old cloth clothes, as coats, cloaks, etc., are torn into narrow strips ; these are joined into one length, and are rolled up in balls. They form the warp; coarse coloured yarn makes the woof. It is sent to a weaver and woven. These carpets are comparatively inexpensive, and last long ; but as we have never seen them, we know nothing about their appearance.

Good rugs for bedrooms may be manufactured at home, by cutting pieces of list from flannel into short lengths and knitting them into a twine foundation. First knit a number of stitches, sufficient for the width you require; on the third row begin to knit in, with every stitch, a piece of narrow and short list. Make it the desired length, line it with any piece of old carpet or drugget to keep it firm. Short pieces of red flannel might be knitted in about four stitches deep at each end of the row if a border be desired. But then the four first rows, and four last, must be of red flannel instead of list. This makes a cheap and comfortable rug.

Carpets are generally made up by the upholsterer, at a charge of threepence on the yard. This includes binding, but the tape will be extra.

A clever woman can make a carpet perfectly well. The great secret is for the patterns to match down each breadth, a little puckering and some contrivance will easily achieve this, and there will be less waste than if an upholsterer's people did it—as they have not patience to contrive and arrange it as it may be done. The moss patterns, which are, after all, the very prettiest and most picturesque of carpets, save the waste of this pattern-matching which, unless care and skill are shown, is excessive. If coarse paper, used for the purpose, is laid over the floor under the carpet, it will last much longer and feel much softer to the tread. Carpets are laid down by means of a stretcher, hammer, and tacks. The first thing to be done in laying down a carpet is to clear the room of furniture, and place the carpet as it is meant to go. Then begin at one corner, and nail down one side of the *cut ends* of the breadths, not the selvage way. Continue nailing down by the selvage side. The carpet is stretched carefully, so as to be neither too loose nor too much strained. If you are nailing it down yourself, and you have

no stretcher, get some one to help you. Let him stretch the carpet with all his strength while you nail it down. When two sides are nailed down, nail the side opposite to the selvage ; and lastly, the fourth side (of cut ends of breadths). Here the greatest stretching is required to get rid of puckers.

A carpet must be well laid down, or it will not wear well ; it is best, if it can be afforded, to have it done by experienced people.

THE DINING-ROOM

Should look warm in winter, and cool in summer. The carpet should be a rich Turkey or Axminster—not quite covering the floor, but leaving a border of polished oak. The sideboard should be (in the country) of old oak carved, all the furniture matching it ; in London, of polished mahogany, the cellaret to match. The dining-table should be oval, of polished mahogany ; the chairs of the same, with leather cushions, harmonizing in colour with the curtains. The side-tables should not be too large ; the chimney-ornaments of bronze ; on the walls, family portraits, or well-chosen landscapes—*not* paintings of any painful subject.

The colour of the dining-room should be bright and rich, suiting the aspect, but we may suggest that green (of *a grey tint*, not arsenical green) is a good colour, as it is warm-looking in winter and has the effect of looking cool in the summer. It harmonizes also with the rich colours of the carpet. The walls should not be papered, but painted delicate green and varnished—the cornice picked out with tints of green and soft greys. The curtains should be of rep or damask, the leather of the chairs of the same colour ; or, of a perfect interval of shade between them and the wall.

Dinner Table Ornaments.

The dinners *à la Russe* exact more splendid ornaments for the dinner-table than were formerly required. The Exhibition of 1878 has furnished several specimens of beautiful dinner-table decorations.

About one of the prettiest is the looking-glass plateau with the scented fountain, represented in the plate. Of course, the difficulty of drawing it has been great, but it will be understood that the vases of flowers standing on it, the perfumed water, and the fruits and creams are all reflected in the looking-glass, which will also shine and glitter in the gas-light above. The rim, filled with sand, holds flowers. Nothing can be prettier than this for a Russian dinner ; we think, even the splendour of a silver plateau cannot surpass its effect.

These dinner ornaments may fairly be classed, we think, with furniture, although they are, of course, only used at dinner-time.

THE DRAWING-ROOM

Might have a light-coloured paper and paint picked out with gold, and the cornice and ceiling the same, with soft shades of grey. The furniture may then be of any hue chosen. Amber is very elegant; peach-bloom delicate ; or pale green. Blue is also pretty, but the instructions given as to colour must be remembered in every case. Chintz, and under muslin curtains, are pretty for summer. The furniture might be somewhat as follows :—

List of Furniture for Drawing-room.

Brussels carpet or velvet pile, hearth-rug to match, or fender-stool of worsted work—fender and fireirons.

In summer, a looking-glass chimney-board, upper portion perforated to let air in ; a rustic screen where fender would be, and hot-house plants in it on a raised stand, or velvet curtains trimmed with lace.

Loo-table. Pembroke-table.

Small tables, marble tops, for vases of flowers. Five o'clock tea-table.

Chess table. Ladies' work-table.

Console tables and mirrors.

Davenport ; or fancy writing-table, furnished with inkstand, penstand, blotting-book, letter-weigher, taper, pen-wiper, china saucer, with seals, wax, etc. etc. Grand piano.

Two large china vases for flowers.

Brackets for old china and statuettes.

Chimneypiece, pier glass, handsome clock, lustres, china vases and figures.

Sofa, ottoman centre, occasional table for tea, footstools, prie-dieu chair.

The sofa, chairs, and ottoman should be of the same coloured satin as the curtains, covered, in summer, with chintz.

Fire-screens, banner-screens, knick-knacks on tables, etc. etc.

The wall pictures may be left to the owner's taste.

Above all, the room should have an air of comfort and occupancy. Books lying about here and there—not the magnificent volumes of engravings, etc. which lie on the loo-tables, but *readable* books and periodicals—a lady's open workbox—chairs moved from their places, give the home-like air which has so great a charm for the casual visitor

THE LIBRARY

Should have a rich Turkey carpet, and the furniture should be of a handsome and stately character, of carved oak or rosewood. Above the bookshelves should be busts of distinguished authors, and in the intervals between them Mercuries (or tall stands) with the same. Over the mantel-piece a good picture ; on the chimney-piece itself a marble or bronze timepiece ; bronze ornaments ; a centre table, two writing tables with small drawers, duly fitted up with inkstand, pens, blotting-books, tapers, letter-weighers, paper weights ; a Postal Directory on one, a Peerage on the other, a barrel of string, large scissors, paper-knives, penknives ; globes and maps between the bookshelves ; a portfolio, stand for choice engravings ; a cabinet for gems of art ; general colouring grave and warm.

THE SCHOOLROOM.

The schoolroom should, if possible, receive the morning sun, which will be found a great enlivener of youthful intellects. It should be a nicely furnished room ; the apartment in which early tastes and dispositions, as well as intellects, are cultivated, should not be dull, cheerless, ugly and depressing. Where expense is no object, good pictures and

thoroughly well-furnished bookshelves will be found great adjuncts to education ; a terrestrial and celestial globe, an easel or two as required, a really good piano, a library-table with drawers, two inkstands and other writing materials, slates, a small round work-table, one easy-chair or a sofa, and light cane-bottomed chairs for the elder pupils, high-backed chairs and *low* chairs for the little ones are required. Under the book-shelves should be cupboards to hold slates, copy and exercise books, and drawing materials ; on a stand a portfolio for drawings. Atlases must be provided, and a Canterbury for music.

THE NURSERIES.

The Nursery should face either south or east. It is cruel to condemn infants to north rooms, or underground rooms ; both are unhealthy abodes for them. Let the mother remember that the future health of her offspring depends greatly on the admission of air and light to their apartments. Nursery walls should be painted and varnished, that they may be easily and *often* washed down. The floor is best covered with a carpet which may be taken up daily in winter ; in summer it is better to have *no* carpet, but a few soft sheep's-wool mats on the floor. No curtains should be allowed in summer ; the room should be made to look very pretty, with coloured prints on the walls of pleasant and cheerful subjects—appropriate emblazoned texts will also charm the little people. Their tastes may be judiciously cultivated even in infancy. Low chairs and tables as well as high ones, a closet for toys, and a shelf for books are required.

The night Nursery should be well ventilated, without bed-curtains or window-curtains ; strips of carpet by the beds only, and not too many persons in the room. There should be high fenders and fire-guards in both rooms, and an Etna should be provided for the night nursery, and a large clothes-horse for airing clothes.

THE BEDROOMS.

A lady's bedroom (where money can be commanded) may be a very charming retreat. Bedsteads of great elegance may be purchased, and should if possible stand back in an alcove. We have seen them of carved ivory, dating from Queen Elizabeth's days : of carved oak, of polished mahogany, of very pretty manufactured brass. One very splendid bed-stead, of Louis XIV.'s time, we have seen, the centre of the top of which was lined with looking-glass, surrounded by a painted ivory frame of great beauty ; fluted blue satin sloped from it to the sides, and from thence fell blue satin curtains trimmed with lace. It was a couch fit for a princess.

The bedstead of modern days is less splendid but far more healthy, for curtains are very generally eschewed by the wealthy class of our day, and the light but elegant brass bedstead is wisely preferred. The pillows are edged with lace, the coverlet an embroidered or Marcella quilt, on it a coloured silk *duvet.* On the pillows an embroidered case, lined with same colour, for the night-dress.

Bedroom carpets should not be fixed to the floor, a margin of polished wood may be left round the room, so that the carpet may be taken up and beaten frequently. It should not be of a large bright pattern : a soft

moss carpet, or some general tint of great delicacy, is best. By the side of the bed should be a deep white-wool flossy-looking mat for stepping on when the lady gets up. A similar rug before the fire in winter, and a small one before the toilette-table, are also desirable. Near the washing-stand should be spread a large square of thick soft flannel, nicely bound, for the bath to stand on. The toilette service should match the washing-stand china, and both should harmonize with the carpet and walls. In some houses you will see lace curtains fastened with a crescent to the ceiling above the toilette-table, and floating down on each side of it. These are used in old families. In former days, at least about a hundred years ago, it was usual when a death took place in the family to draw these curtains over the looking-glasses and mirrors. In the present day they can be drawn to shelter the toilette-table from dust, but their chief use is adornment, to which they add greatly. A screen round the washing-stand is comfortable and may also be made very ornamental. A cheval glass, easy-chairs, a sofa, a table for writing, etc., are necessary. On the latter should be placed in every bedroom an inkstand, pens, blotting-paper case, and taper. In many houses a Bible stands beside them.

The curtains of the bedroom should be chintz, we think, both as being more lively to the eye and capable of cleaning more perfectly than satin or damask. The new material, Cretonne, is also well suited to the purpose. A bookcase, fixed to the wall or standing near it, should contain favourite books. Pictures in bedchambers are generally of a religious character, and wall texts are especially suitable as well as ornamental. One general rule may close our hints on a handsome chamber: let everything in it tend to soothe and cheer the inmate, and make it a retreat from the noise and hurry of daily life.

The Gentlemen's Dressing-rooms should have the same carpet and curtains as the adjoining bedroom; easy-chair and couch of the same chintz as the bedroom furniture; the dressing-table must not be a toilette; there must be a good-sized marble washing-stand, a bath, boot-jack, etc.; table with writing materials, and small bookshelves.

HOUSEKEEPER'S AND LADY'S-MAID'S ROOMS.

The Housekeeper's Room should be neatly but plainly furnished, and should contain large closets, or cupboards, for her use; writing materials, a slate-book and pencil for the dinner *carte*, and as the individual is often alone, it is usual to put a modest sofa or leather easy-chair in her room.

The Lady's-maid's Room should have a long, large deal table in it for cutting out; a dummy figure, or at least a head for fitting trimmings and bonnet making, two flat-irons for pressing dresses, etc.; an Italian and gauffering irons, soft and hard clothes brushes, and a sewing machine. In many large houses a room is set apart for the needlework of the family; when this is the case the lady's-maid's room is simply furnished as any other bedroom of modest pretensions, and the table, machine, irons, etc., are transferred to the workroom.

SERVANTS' HALL AND SERVANTS' BEDROOMS.

The Servants' Hall has a long, large oak or deal dining-table, and forms or benches for sitting at it.

In many large houses the servants' bedrooms are a disgrace to the dwelling; while amongst the middle classes very tidy rooms are provided for the domestics. We have seen servants' chambers in great mansions which were void of nearly every comfort. Why should not servants have neat and even pretty rooms? It would be one means of civilizing them and improving their tastes; and surely they require baths even more than their mistresses do. We wish we could see a bath in every servant's room, a toilette-cover on her table, a good text enlivening her wall with gay colours and wholesome counsel, and a glass of flowers, or any other cheap adornment. If female servants are encouraged to try and make their bedrooms pretty, they will take a pride in them and acquire habits and tastes which may ultimately improve the home of the working man. In addition to neat ordinary furniture, we would give, in the rich man's home, a hip-bath, a few bookshelves and books on them, a table and inkstand, and a flower-glass or two.

"I must say a word," observes Miss Nightingale, "about servants' bedrooms. From the way they are built, but oftener from the way they are kept, and from no intelligent inspection whatever being exercised over them, they are almost invariably dens of foul air, and the 'servants' health' suffers in an 'unaccountable' (?) way, even in the country. For I am by no means speaking only of London houses, where too often servants are put to live under the ground and over the roof. But in a country '*mansion*,' which was really a 'mansion' (not after the fashion of advertisements), I have known three maids who slept in the same room ill of scarlet fever. 'How catching it is,' was of course the remark. One look at the room, one smell of the room, was quite enough. It was no longer 'unaccountable.'"

WOODS USED IN FURNISHING.

The woods used in furnishing are—deal, mahogany, rosewood, walnut, birch, maple, beech, white and yellow pine, satin-wood, cedar; and oak, lime, and pear, which are used for carving. Of these woods, deal is the cheapest and rosewood the dearest.

For bedroom furniture, japanned (or painted) deal is quite good enough. It is much cheaper than mahogany or birch, and looks fresher than birch after a lapse of years, if it is taken care of and kept clean.

For people who can afford it, an inferior kind of walnut-wood is very nice in bedrooms. But *good* mahogany, if it is not too expensive, is the best investment, for (with care) time improves it, and it will always, if sold, bring nearly its original price. Deal is used for the tables in kitchens, etc.

There are two kinds of mahogany—Spanish and Honduras. Spanish is the best; it is darker in hue, and the grain has a curl or wave in it which is considered a beauty, and regulates its price. It has a fine close texture, is very hard and strong, and does not break easily, nor does it

warp or twist. The weight of mahogany is the best test of its value, the heaviest being, in general, the best. Sometimes mahogany is veneered over cedar or pine—that is, thin slices of the more valuable wood are glued on to other wood of less value. The Honduras mahogany has a coarse, loose, and straight grain and is not so valuable. Tricks are practised occasionally, by which Honduras mahogany is made to look the colour of Spanish. It is stained to the colour before it is polished. The same deceit is practised on birch, which is thus made to take the appearance of mahogany. The young housekeeper, to avoid being thus imposed on, should deal with a first-rate firm incapable of dishonesty. Buying *cheap* and showy furniture is a great mistake, as it never lasts, and costs more in the end for repairs, or replacement, than good articles would cost at first.

Rosewood is a dark hard wood, with a slight curl or wave in the grain. It is most used in veneers, but the solid wood is sometimes used.

Walnut, at the present time, rivals rosewood in use for drawing-room furniture. It is a very lovely wood, very close grained, compact and hard, and it takes a very high polish.

Birch is an American wood, of a pale yellowish brown, which, when polished, has a silky lustre that is very pleasing. By staining, it can be made to resemble Honduras mahogany, as we have said. It is much cheaper than rosewood or mahogany, and makes pretty chairs, etc.

Maple, also an American wood, somewhat resembles satinwood, but it is much darker, and the grain has more curl. It has knobs in it called birds' eye. It is used very much for picture-frames, and is not very common in furniture, but the writer possesses a remarkably handsome chest of drawers of maple.

Beech is a close tough wood, much used for the framework of chairs, bedsteads, and tables. It is rather paler than birch, and may be known by its having on it little specks of darker brown.

White and yellow pine are much used at present, japanned or painted, for bedroom suites, and look very nice, but the stain is apt to fade, and if the wood has not been very well seasoned, the furniture is apt to crack and fall to pieces. We think honest deal japanned, far preferable to pine.

Satin-wood is very beautiful for small fancy tables, cabinets, etc. etc., or inlaying. It was once fashionable in furniture, and still (we think) gives an air of distinction to a room, as its use is not quite of to-day.

Cedar is of a dark colour, resembling pale mahogany, and has a sweet aromatic smell. Chests of drawers made of it, and veneered with mahogany, are very nice, as cedar keeps away moths.

Oak is either British or foreign ; the latter is known by the name of wainscot, and is used for kitchen tables in great houses. British oak is darker in colour than wainscot. Oak is used for carved furniture of the best and most expensive description.

Lime is seldom used except for carving.

Pear resembles pine.

Cane is split, and makes chair-bottoms for bedrooms.

Veneered articles of furniture are cheaper, and often lighter to move than those made of solid wood. By *looking underneath* a table, the purchaser can see if it is veneered or solid. Veneered goods are often preferable to solid, not only because they are cheaper, but because there is less risk of their splitting or warping.

The purchaser of veneered goods should catch the light upon them so as to see if the surface is perfectly flat. If it is *not so*, he should not purchase them—any inequalities of surface are caused by the veneering being badly done, or the wood underneath not having been seasoned.

BUHL-WORK consists of woods inlaid with metal (generally lacquered or gilt brass), or with ivory, tortoiseshell, etc. etc.

MARQUETRY resembles mosaic work, or Tunbridge-work—*i.e.* a pattern is formed by blocks of coloured wood being joined together. Marquetry is not so minute as mosaic work.

Parquetry is a coarse kind of buhl-work used for floors.

Almost all articles of modern wood furniture are French polished—dining-tables are sometimes excepted on account of hot plates, etc. marking the surface.

CHEAP FURNISHING.

We have now to consider how taste may be blended with economy.

Of course, the same laws respecting harmony of colour belong to the rich and poor alike. Say you have hired an ordinary London house. Manage to get permission to choose the papers yourself, and get *for all* as soft and light a tint as the means placed at your disposal will admit; but recollect that varnished papers are cheapest in the end, as they will clean like new with bread. *If possible*, have the dining-room painted.

Panelling and imitation wainscoting diminishes the size of a room, and consequently is to be eschewed for small rooms. If you have furniture, endeavour to harmonize the colour of the wall with it, and with your curtains.

The white and gold drawing-room papers are not very expensive; for about 5*d.* or 6*d.* a yard a tolerably good one can be obtained.

A drawing-room suite mounted with green rep can be obtained for 10*l.* 10*s.* at most of the upholsterers, and is worth the money, as when the seat stuffings sink, they may be re-stuffed by the notable housewife herself.

The tapestry carpets are *very* pretty, and will with care last many years, though not so long as the Brussels; as, however, they last very fairly with care, they can really be recommended. The moss patterns are very suitable to small rooms, and have a charming effect;—these carpets are about 2*s.* 8*d.* per yard; hearth-rugs to match, 17*s.* 6*d.* In laying them, the floor should first be covered with the coarse brown paper used for the purpose; it not only protects the carpet, but gives a very thick feeling to it when trodden on. The suite of furniture will contain a sofa, 2 easy-chairs and 6 ordinary chairs. A loo-table may be had cheaply if the top is made of deal (which can be covered with the cloth) but care must be taken not to get a badly seasoned wood, *however cheap*, as in time it will open across. A second-hand loo table is to be preferred if it can be bought, and chintz curtains, with lace curtains under them, are prettiest for a drawing-room. A piano, a few vases of flowers, nicely arranged, a good clock, a chess-table, a Davenport, a work-table, will be found ornaments enough, and we may suggest a book-stand on the table, with some choice authors, and a few ornaments on the mantelpiece. These few simple articles will furnish a comfortable room, *if* it be light and well ventilated and *occupied.* But it would appear poor and shabby

if it is kept dark, dusty, or *too* tidy. Above all, we protest against the formal row of books crossed over each other on the table, the shell baskets, etc. etc., which disfigure instead of ornamenting a room. Books which are *readable* are a great, almost indispensable addition to a lady's drawing-room, but not the collections of poems and old-fashioned hereditary volumes which figure on the loo-table solely on account of their binding; nor the trashy novels thrown about it. Taste can be shown in *form* also. Prettily *shaped* vases; the disposal of the furniture about the room, even the fall of the curtains, will show this precious gift, and alter the whole appearance of the apartment. Above all, perfect cleanliness and freshness, pure air admitted, and plenty of light when possible, give a great charm to a room. In winter, the fireplace should always be bright and well-swept; in summer it should be filled with shavings, or some graceful *white* ornament, with a few coloured flowers on it. A small bundle of the threads of tarletane pulled out, have a very light and vapoury appearance. Living fern leaves, or good bunches of lilac, are charming in the country fireplace. Brackets on the wall are cheap and pretty.

The dining-room requires a stronger carpet than the drawing-room, being in moderate houses more used, as the housekeeper of small means generally avoids the expense of a double fire, by sitting in it till after luncheon or early dinner; also the feet of the servants waiting at table wear the dining-room carpet. It should be a *strong* Brussels, harmonizing in colour with the paper and furniture. The mantelpiece does not absolutely require ornaments, though a marble clock, bronze (or imitation bronze) candlesticks, the same material for spill stands, look comfortable. The dining-table should be a telescope one of mahogany, *not* French polished, because hot dishes leave marks on the varnish. It should be polished with oil and hard rubbing. The whole furniture should be mahogany, but the chairs should *not* have *horsehair cushions;* no room can look nice with them, nor with a horsehair couch. They should be mounted in leather, or at least American cloth, but the latter soon wears out. An American chair, a leather easy-chair, a sideboard, or a waggon (if the former be too expensive), and a writing-table in the window if it be a bow-window, will furnish this room moderately well. When there is no library, the book-shelves are generally on each side of the dining-room fireplace.

The hall does not require more than an umbrella-stand, pegs for hats, etc., a chair, and a small hall-table. Floorcloth should be strong, and should harmonize with the walls in colour. A weather-glass is useful in the hall.

In the bedrooms much reduction in expense may be achieved by a little ingenuity. The room need not be carpeted all over. A piece of Kidderminster in the centre of the room suffices, and is healthier, for it can be shaken every week; the boards round, which are apt in London to be discoloured, may be stained oak colour and varnished, when they will dust and wipe easily. No carpet should be under the bed, nor should there be a valance—only the oak-stained floor. The curtains should be pure white dimity—the prettiest and cleanest-looking of all, or, if cretonne could be afforded, they would be pretty, but they are very expensive, as they do not wash well. Two chairs, a washing-stand and bath, a piece of bound flannel for the bath to stand on, and a chest of drawers, are indispensable; a deal toilette table, with a ledge for holding boots and shoes

underneath it, is good enough. It is covered with a lined book-muslin toilette. Some old-fashioned families cover the back of the looking-glass with muslin, and draw it in with bows of ribbon at the hinges. This has a pretty effect, only the edge (of lace) showing in front. In cases where the bedroom is very small, the toilette table may be utilized, by having shelves under it (enclosed with sides and a door) for dresses. The toilette muslin being made to open in the same place as the doors—*i.e.*, in the middle of the front—will throw back and allow the doors to open easily. The dresses can be laid at full length in it.

All bedrooms require the same furniture, more or less. It should all be of the same kind of wood, whether mahogany, walnut, or painted deal, as harmony of colour is required to make the room look well.

Cheap bedroom bookshelves may be made thus: Cut a plank of about three or four feet in halves. The plank should be a good inch thick; plane the halves and paint them, also the edges; take four and a half yards of red or green cord; divide it in halves. Take the shelves, make four holes in them, one in each corner, exactly *over* each other in each shelf. Put one of the halves of cord through the front hole of the bottom shelf on the right side, tie a knot in the end to keep it from slipping through—a good large knot for the shelf to rest on; leave a piece of cord above the hole through which it is passed, the height of your highest book; tie another knot, pass the cord through the front hole at the righthand of the other shelf; then put it through the front *left*hand side of the second shelf, and tie a knot, then pass it through the front lefthand hole of the bottom shelf and tie a knot; cut off; be careful that both sides are exactly the same height before you cut off the cord or tie the knots; it requires careful management. Next pass a cord through the back right-hand hole, tie a knot below; measure the same length, or height rather, as front cord, tie a knot, pass the cord through back righthand hole of second shelf; carry it over to back lefthand corner; pass it through hole, tie a knot (after measuring with front cords), pass it through bottom left-hand hole and fasten with knot. Take care that the measurement of the cord is exact, or the shelves will hang crookedly. Then drive one large brass-headed nail into a firm part of the wall (a joist is the place), twist the cords together at the top, and hang up the shelves; or put in *two* nails, and stretch the cord over both, if you wish for more room for your books. A prettily made toilette pincushion, a glass or vase of flowers, will greatly enliven a chamber. We give two receipts for toilette pincushions:—

No. 1.—Make a round pincushion, with a hollow in the middle of it large enough to hold a small tumbler. Paste a firm piece of cardboard at the bottom of it. Then make a cover of muslin over pink silk, leaving a hole just over the hollow in the middle of the pincushion for a tiny glass, which you must buy to fit it, and which, when the pincushion is on the toilette table, must be filled with a bouquet of delicate flowers. A lace frill should be sewn round the edge of the pincushion, to hang to the bottom of it.

No. 2.—A small square deal box, lined with pink silk, and covered externally with the same. The inside lining should be quilted on flannel; the outside covered first with muslin, and then with a deep lace frill.

Make a pincushion *on the lid*, cover it with pink silk and spotted muslin, and edge it all round with pink silk ribbon rucheing.

A few good engravings, if possible, may be hung up on the bedroom walls. Short muslin blinds are required for the windows; and against the wall behind the washstand, it is well to fix a piece of spotted muslin, hemmed round with a broad hem, in which a coloured ribbon is run, to guard the wall paper from splashes.

Old boxes may be utilized and made into seats, by covering them with cheap chintz; the top made plain; a frill the depth of the box down the sides. The top cover should not be joined to the side frills, in order not to rumple them when the box is opened. It is sometimes well to stuff a cushion with chaff for the top, and to nail it on by the tape which binds it; the chintz cover goes over it, and the side frills are put on as when the box is covered without a cushion. But the cushion prevents it from being used for travelling purposes without some trouble in uncovering it. The loose, unstuffed cover is easily lifted off when the box is required elsewhere, or the chintz requires washing. A long trunk thus stuffed at the top and covered at the sides, makes a nice seat at the foot of the bed, and is very convenient for putting away dresses at full length. Smaller boxes do for keeping bonnets or any other garments in. It is astonishing how a little ingenuity will help to beautify a room and make it comfortable.

For persons who cannot afford a toilette service, a nice box pincushion may be made from an old cigar-box, to be purchased for threepence at any tobacconist's. It should be lined with glazed pink calico, a pincushion stuffed and fastened on the top, edged with lace or quilted ribbon. The sides must be first covered with pink calico and then with muslin frills edged with lace, or hung with lace frills the depth of the box, fastened to the edges of the sides. The china pots in which potted-meat is sold will also help to furnish cheaply the lady's toilette-table.

One great defect of modern houses is the want of closets and cupboards. Ingenuity and industry can, however, often supply this deficiency. A good closet for hanging dresses may be made in a bedroom recess, by merely putting a shelf of deal a little way from the ceiling, and a thin slip of the same across the recess at the bottom; along the edge of the shelf fix a strong red cord, by a brass-headed nail at each end. Do the same at the bottom edge. Then take some cheap chintz, or cretonne, or dimity; hem it top and bottom, and put on small rings. Pass these through the cords, and the curtains will draw backwards and forwards quite easily; if they set in slight flutes so much the better, the housewife will thus have a pretty-looking wardrobe at little cost. Next as to cupboards. Nearly everybody possesses some old boxes, or packing-cases; place one on its side, with its open top towards you; another on it, and another on that if possible. They should stand by a wall on the landing-place of the staircase or in any convenient corner, and be fixed to the wall thus; hammer into the wall two strong nails on each side about the middle of each box. Make a hole large enough for a cord or rope to go through in the sides of each of them, and thus tie them securely to the wall. The expense of making the lids into a door will not be great; a hinge on each box and a strong lock also will be necessary. Cover them with one of those hall papers, which are excellent imitations of wood, and you will have a good closet, which if you leave the house can be re-converted into packing-cases.

Whilst we are on the subject of bedrooms, we feel inclined to complete our subject by an extract from one of Leigh Hunt's charming essays :—"Order in a house," he says, "first manifests itself in the room which the housewife inhabits, and every sentiment of the heart, as well as of the external graces, demands that a very reverence and religion of neatness should be there exhibited ; not formality, not a want of snugness, but all which evidences that the esteem of a life is preferred to the slatternliness of the moment. . . . . .

"Commend us (for a climate like ours) to a bedchamber of the middle order, such as it was set out about a hundred years back, and may still be seen in the houses of some old families, the room of moderate size, the fourpost-bed neatly and plentifully but not richly draperied ; the chairs draperied also, down to the ground ; a drapery over the toilette ; the carpet a good old Turkey or Brussels, not covering the floor and easily to be taken up and shaken ; the wardrobe and drawers of old shining oak, walnut, or mahogany ; a few cabinet pictures, as elegant as you please ; the windows with seats, and looking upon some green place ; two or three small shelves of books ; and the drawers, when they are open, redolent of lavender and clean linen. We dislike the cut-and-dried look of modern fashions ; the cane chairs, formal-patterned carpets, and flimsy rooms ; modern times (or till very lately they were so) are all for lightness and cheap sufficiency, and what is considered a Grecian elegance ; they realize only an insipid or gaudy anatomy of things, a cold pretension, and houses that will tumble upon the heads of our grandchildren. But these matters, like others, are gradually improving. If our bedroom is to be perfect it should face the east, to rouse us pleasantly with the morning sun ; and in case we should be tempted to lie too long in so sweet a nest, there should be a happy family of birds at the windows to salute our rise with songs."*

Here is another charming picture by the hand of a great novelist :—"The room in which I found myself was one of those never seen out of England, and only there in unpretending country houses which have escaped the innovating tastes of fashion. A bedstead of the time of George I., with mahogany-fluted columns and panels at the bedhead, dark and polished, decorated by huge watch-pockets of some great-grand-mother's embroidery, white spotless curtains, the walls in panel, and covered in part with framed engravings a century old, *a large high screen* separating the washstand from the rest of the room, made lively by old caricatures and prints, doubtless the handiwork of female hands long stilled. A sweet, not strong, odour of dried lavender escaped from a chest of drawers polished as bright as the bedstead. The small lattice-paned window opened to the fresh air, the woodbine framing it all round from without ; amongst the woodbine the low hum of bees. A room for early sleep and cheerful rising with the eastern sun, which the window faced."†

We venture to suggest to inmates of small houses the idea of the high screen, as a substitute for a dressing-room, Such a screen would not be expensive ; a common drying clothes-horse would suffice, with canvas or

---

* "Men, Women, and Books," vol. i. pp. 120, 121.

† Lord Lytton's "Caxtoniana," vol. ii. p. 94.

any cotton cloth strained over it. Pictures should then be pasted or gummed all over it, and a cheap varnish passed over all. It is indeed to be wished that this forgotten decency could be restored to our homes. Making a screen, too, would be an excellent household amusement in which all might join.

We must now say a few words about bedsteads, beds, and bedding. Iron bedsteads are cheapest upon the whole, and may be either with or without furniture. They may have a half-tester and curtains, or a wooden pole may be fixed in the wall and the curtains may hang from it. The latter makes the bedstead come cheaper, and looks well, but the curtains are apt to hang rather close to the head. If the bedstead stands as French beds are intended to do, with its side to the wall, the curtains make a tent above it and hang over head and foot, but they should be put back from the latter before sleeping, that the sleeper may have plenty of air. The cheapest curtains are dimity, and really nothing looks better if they are kept clean and snowy white; about eighteen yards will make a pair of bed curtains for a three feet wide bed, with one breadth and a half in each curtain; but two breadths, which would be thirty-six yards, would be much handsomer, and are required to cover a bed five feet six inches wide. The curtains must first be bound with braid, and then a white fringe should be sewed down one side; the other joins behind the head, or by the side of the bed, and does not require any. This fringe might easily be made by the housemother herself, or some of the young people, by knitting in ends of cotton according to the following receipt:—

"Cast on eleven stitches; one plain row; knit two; turn over the needle and knit two together; turn, and knit two together; turn, and knit two together; put the fringe over the needle; knit two; turn over the fringe and knit one plain row back, and repeat."

Or the curtains may have a border sewn on of scarlet Turkey twill, or washing cambric of any other colour, or they may have a coloured fringe; but if the room be bright and sunny, pure white will look much the best. Cretonne and chintz are both too expensive for small means. It looks nice to loop back the curtains in the daytime to the bedpost, with either white binding, or if the trimming be coloured, with ribbon of the same hue; or if this is not liked, the curtains when they fall on each side of the head of the bed, may be raised by the servant, and their ends laid on the pillow. Of course, the bed and window curtains must be alike. Mattresses are more used than feather beds in the present day, being thought more conducive to health. The best mattress is the spring mattress. It is made of a succession of coils of stout copper wire, sometimes galvanized. These are set in a framework of stout laths, having one or two transverse bars from head to foot as the width requires. The springs are fastened to the laths, and secured to strong canvas at the top, upon which is laid a padding of wool covered with the ordinary check covering. These mattresses cost, for a three feet wide and six long bedstead, 1*l.* 7*s.*, and for one five feet wide, 2*l.* 10*s.* A thin woollen mattress is required on the top for the protection of the springs. Ordinary woollen mattresses are softer than thin horsehair ones, as well as cheaper; but a good thick old-fashioned hair mattress on a straw paillasse, or better still on *a sacking*, is an excellent bed.

Feather beds are expensive, except to those who pick their own poultry and can save the feathers, which should, however, be thoroughly well-baked before using. A feather bed, bolster, and pillows cost about 12*l.* for a full-sized bed. In purchasing one, it is well to go to a *very* reliable and respectable shop, as sad tricks are occasionally played in the making of feather beds. We remember how a lady once in a ready furnished house, feeling something very hard in her bed, opened a portion of the seam and found the *whole* wing of a goose in its original state, pieces of old woollen cloth, etc. Besides, there are different qualities of feathers. If on pressing your hand on the bed it rises up again quickly, the feathers are fresh and good. If the bed does not rise at all, they are old feathers cleaned, which are really objectionable; and here we must observe that feathers hold infection in a remarkable degree. Many families keep scarlet fever as a perfect inheritance from ignorance of this fact, and lodging-house beds by the seaside often give fever and even smallpox to the unlucky visitors. *Nothing* will disinfect a bed except unmaking it, having the feathers re-baked, and the tick washed, with a little of Condy's disinfecting fluid or chloride of lime in the water. The cost of purifying feathers is 3½*d.* per pound. Pillows are expensive things. Very good, cool, and pleasant ones, most grateful to patients in fevers, may be made by curling paper and stuffing a tick with it. For this purpose all old useless notes, circulars, etc., should be saved. The paper is cut into narrow strips, and curled round a rather blunt penknife. A little shredded flannel or cloth should be mixed with it, and the pillow should not be stuffed too hard.

Beds and mattresses may be stuffed with chaff, but once a year it must be taken out and fresh put in, instead of that used. Well dried moss answers the same purpose, and in some countries dried birch leaves are used.

If poor people would only gather the seeds of the thistle—thistle-down—every year, and keep their collections in dry paper bags, they would soon have enough for the softest of down pillows, and at the same time that they were preparing this great luxury for themselves they would be diminishing the thistles for the benefit of cultivation.

Blankets.

About three for each bed should be provided, small or large as required. For people who can afford them, *duvets—i.e.*, down coverlets—are very delightful and ornamental. In some families four and even five blankets are allowed to each bed; but we give the lowest possible number which will be required. The better the quality of the blankets the fewer will be required. They are sold by the width and length, and should be selected for their weight, softness, and thickness. The price of very good "extra supers" is from 30*s.* to 50*s.* per pair. Aldershot blankets are often used for servants. They are only 6*s.* per pair.

Marseilla quilts are in ordinary use and may be of several qualities. A patchwork quilt lined with soft brown paper would be found very warm in winter. Knitted quilts are pretty, but the cotton for making them comes expensive.

The servant's bedroom should be made as comfortable as possible, and she should be encouraged to keep it nice and neat. Commend her for any attempt to adorn her bedroom.

PURCHASING SECONDHAND FURNITURE.

Furniture may be purchased very cheaply at sales, but in order not to run any risk of being tricked by brokers running up the prices, it is best to mark a catalogue with the exact sum you would give for each article, and *not on any account* to exceed it; or you could give a catalogue thus marked to a broker, and pay him a per centage on his obtaining the articles at your price. The furniture you intend to buy, you should previously closely examine. If it is wooden furniture, see that the surfaces are level, that there are no cracks or rickety legs or starting veneer. If the furniture is really good, it will be better to buy it than to purchase new, because the fact of its having been properly seasoned is proved, and it easily and cheaply re-polishes.

We do not recommend purchasing carpets or curtains at a sale. The latter seldom fit, and *unless they are known* to have been only a short time in wear, their lasting cannot be relied on. The same may be said of kitchen utensils.

In purchasing glass and china there can, of course, be little possibility of mistake.

We add a list of kitchen utensils for small houses, and for large ones, as some guide to persons about to furnish; and similar lists of all the other necessaries required in housekeeping.

Cheap Kitchen Furniture.

Open range, fender, fireirons.
1 deal table.
A bracket of deal to be fastened to the wall, and let down when wanted.
2 chairs, rush-bottomed.
1 wooden chair.
Floor canvas.
A bit of coarse canvas to lay before fire when cooking.
A wooden tub for washing glass and china.
A yellow bowl for mixing dough.
1 small zinc basin for washing hands.
Wooden salt-box to hang up.
Small coffee-mill.
Plate-rack.
Knife-board.
A large brown earthenware pan for bread.
A small wooden flour kit.
3 flat irons, an Italian iron, and iron stand.
Old blanket for ironing on.
2 washing-tubs.
A clothes line.
Clothes horse.
2 tin candlesticks, snuffers, and extinguishers.
2 blacking brushes, and 1 scrubbing-brush.*
1 carpet broom, 1 short handled broom.
Cinder-sifter, dustpan, sieve, bucket, large earthenware pan for washing plates.

* Vulcanized India-rubber scrubbing brushes are *best* of all, but expensive at first.

Cheap Kitchen Furniture—*continued.*

Patent digester.
1 teakettle.
1 toasting-fork.
1 bread-grater.
1 bottle-jack (a screen can be made with the clothes-horse covered with sheets, which will be aired at the same time; or, if it can be afforded, a Soyer's portfolio meat-screen is very useful).
1 set of skewers.
1 meat chopper.
1 block-tin butter saucepan.
1 colander.
3 iron saucepans.
1 iron boiling pot.
1 fish kettle.
1 flour dredge.
1 fryingpan.
1 hanging gridiron.
Salt and pepper boxes.
Rollingpin and pasteboard.
12 patty pans.
1 larger tin pan.
Pair of scales or steelyard.
Soyer's baking-dish.

Large and Expensive Kitchen.

Floorcloth (canvas).
4 chairs.
Large deal table.
Side table.
Marble slab for making pastry.
Spit, smoke-jack, etc., if open range, but kitcheners and gas-stoves are now used in large kitchens.
Rollingpin with revolving handle.
Patent salting machine.
Mincing machine.
Scales and weights and steelyard.
Freezing machine.
Ice closet.
6 wrought iron saucepans—in set.
1 wrought iron stockpot.
1 bain marie pan.
1 braising pan.
1 oval boiler.
1 digester, 1 saucepan ditto, 1 stew-pan ditto.
6 enamelled stewpans.
1 sauté pan, 1 French ditto.
1 potato steamer.
1 salamander and stand.
1 oval fryingpan.
1 round ditto.
1 fluted gridiron.
1 hanging ditto.
1 bachelor's fryingpan.
1 omelet pan.
1 omelet soufflé pan.
1 preserving pan and spoon.
1 flour dredger.
1 sugar ditto.
1 wooden meat screen.
1 plate warmer.
1 coffee-mill.
1 meat chopper.
Meat saw.
1 colander.
Pestle and mortar.
2 gravy steamers.
1 bread grater.
2 sets of skewers.
1 fish slice.
1 egg slice, 2 ladles.
1 pair of steak tongs.
1 egg whisk.
1 beef fork.
1 French cook's knife.
1 steak beater.
1 fish kettle.
Mackerel saucepan.
Turbot kettle.
Salmon kettle.
1 pair of fish scissors.
Sliding toaster and trivet.
Toasting fork.
Spice box.
Box of paste cutters.
12 patty pans.
3 tart pans.
3 Danish moulds.
Cheese toaster.
Dutch oven.

Large and Expensive Kitchen—*continued.*

3 larding pins.
1 mushroom mould.
Star fritter mould.
Scroll fritter mould.
French vegetable cutter.
Vegetable mould.
3 pudding moulds.
6 jelly moulds.
3 cake moulds.
2 wooden spoons.
Sugar spinners.
Sugar moulds.
2 scrubbing brushes.
1 knifeboard.
Knife sharpener or steel.
Wooden bowls for washing up.
3 yellow bowls for mixing puddings, etc.
Large earthenware pan for washing up.
12 kitchen cloths, 12 finer cloths, and 12 dusters.

In very large establishments, "kitcheners" are now generally used. In small houses they are less desirable, as they are apt to spread a smell of red-hot iron through the dwelling, and even the ventilating kitchener, which is best for this purpose, makes a small kitchen too hot for the health of its inmates. The same may be said of the cottager's stove.

Gas cooking-stoves will be found handy, and very economical.

Needful Cleaning Utensils for Cook and Housemaid.

Brushes.—For the cook : one hair broom, one hard broom, one carpet broom, one sweep's brush, two stove brushes, one black-lead brush, one set of boot brushes, two scrubbing brushes. For the housemaid : one hair broom, one carpet broom, one bannister broom, one staircase broom, one dusting broom, one Turk's head broom, three plate brushes, one mattress brush, two scrubbing brushes, three stove brushes, one black-lead brush, one sweep's brush. *Leathers.*—Three for the cook and three for the housemaid, and two pairs of housemaid's gloves. *Weekly allowance of cloths.*—For the cook : one round towel, one dishing-up cloth, one dresser cloth, one table cloth, six kitchen cloths, one dish cloth, one knife cloth, one floor cloth, one rubber, three dusters, one flannel, pudding cloths as wanted. For the housemaid : three glass cloths, three tea cloths, six dusters, two bedroom cloths, one flannel. The quantity can be increased in proportion to the household..

Glass—*Cheap Furnishing.*

12 tumblers.
12 (port) wine glasses.
12 (sherry) wine glasses.
12 claret glasses.
2 quart decanters.
Water jug and glasses.
4 salt cellars.
Bottles and glasses for bedrooms.

Glass—*Expensive Furnishing.*

3 dozen tumblers
6 dozen port, 6 dozen sherry, 2 dozen claret — wine glasses all best quality.
2 dozen Champagne glasses.*
2 dozen Hock glasses.
2 dozen liqueur glasses.
2 dozen finger glasses.

* The Champagne glass with a hollow stem keeps the wine perpetually effervescing.

Glass—*Expensive Furnishing.—continued.*

6 caraffes and glasses.
1 dozen small saltcellars.
4 large ones (if silver are not used).
Claret jug.
4 quart decanters.
4 pint decanters.
Centre glass jug and tumblers.
Badminton jug
12 glass dishes (large).
6 small ditto.
Bottles and glasses for bedrooms.

China—*Expensive Furnishing.*

2 dinner sets—one of Sèvres china for company.
2 tea services—better and ordinary.
2 breakfast sets—ditto.
1 dessert service as elegant as liked.
China marmalade pots.
Pie cases.
Sardine pot covers.
Toilette services.
Washing sets—toilette pails.
Bedroom chimney-piece candlesticks.

China—*Cheap Furnishing.*

1 tea and breakfast service.
1 dinner set for eight persons.
China washing sets for bedrooms.
Small dessert set—the green leaf is cheapest of all—sometimes part of a set may be bought cheaply.
Bedroom candlesticks.

Everything of china and glass, where expense is no object, should be as elegant as it is possible to buy it. Old family china bowls, etc., and Venetian glass of all kinds, are much valued.

Plate—*Cheap Furnishing.*

ELECTROPLATE.

18 large forks.
18 small ditto.
8 table spoons.
4 salt spoons.
12 tea spoons.
8 dessert spoons and 8 dessert forks.
Fish knife and fork.
Teapot.
Nut crackers.
Cruet stand.

Plate—*Furnishing Expensively.*

SILVER.

4 dozen silver forks.
4 dozen small ditto.
2 dozen table spoons.
2 dozen dessert ditto.
4 large salt spoons.
12 small ditto.
18 fish knives.
24 dessert knives and forks.
1 pair of asparagus tongs.
1 pair of grape scissors.
1 pickle fork.
1 crumb scoop.
6 pairs of nutcrackers.
4 salt cellars.
1 cruet stand—small ditto for breakfast.
1 silver sugar sifter.
1 marrow spoon.

Plate—*Furnishing Expensively.—continued.*

1 wine strainer.	3 pairs of sugar tongs.
1 fish knife and fork, 1 fish slice.	Plateau.
2 soup ladles.	Epergnes, etc. etc.
4 sauce ladles.	Candlesticks.
1 egg stand and spoons.	Branches.
Tea shell.	Bedroom candlesticks.
Tea service—i.e., teapot, coffee pot, milk jugs, and sugar basin.	

LAMPS.

Gas is very generally used now in towns. It is the cheapest light there is, and the dirtiest. It defaces and tarnishes gold, blackens the ceilings, and unbinds books; nevertheless it is popular on account of its cheapness and the amount of light derived from it. In halls, over doorways, in passages and kitchens, it is really valuable, and as a means of lighting streets a great public boon. Gas chandeliers, which alone belong to our article on furniture, may be of any degree of elegance. In dining-rooms they should be of bronze; in drawing-rooms, gilt. Petroleum and paraffin lamps are the cheapest next to gas, but the burning them is attended with considerable danger. In fact, an increased premium is required by insurance offices for premises where paraffin is burned. There is also a disagreeable vapour arising from these oils which is very objectionable.

The Duplex lamp in which silver oil is burned, is now generally preferred to all others; but unless very carefully filled and trimmed, there is often a disagreeable smell with it. We are old-fashioned enough to prefer the colza oil to any other still.

Reading lamps of pretty form and very reasonable are now to be bought, and are a great additional evening comfort.

Moderator lamps, with colza oil, are, we think, the best lights yet known, after gas. They may be purchased at any price, from 17*s*. or 18*s*. Some of them are exceedingly pretty.

For a small household, one moderator lamp will suffice. For a large establishment, where gas is not burned, as in country houses, about four will be sufficient. Chandeliers and wax candles supply the most delicious of lights.

A nice hand lamp is also desirable.

Moderator Lamps.

It is useless to describe, in detail, the mode of making a moderator lamp, as the way it is constructed has not much to do with its management. The Moderator lamp is an Argand lamp in principle, with an arrangement for forcing the oil up from a reservoir in the pedestal by means of a piston and springs. These lamps are very apt to get out of order, and after being once repaired are still more liable to being so; the greatest care and cleanliness is required in the management of them. The upper portion of the lamp should be kept quite clean by washing it very often with strong soda and water to remove the clotted oil. The cotton wicks, before putting them freshly in, should be dried in the oven for

twenty minutes. In winter the oil-can should be placed near the kitchen fire before the oil is poured into the lamp, and the lamp must not be kept in a cold room or the oil will congeal and not flow freely. Every day the lamp must be trimmed, the black edge of the cotton wick must be cut off *very evenly** with scissors made for the purpose, and fresh oil must be added. The chimney and globe must also be kept very clean or the light will be impeded. Never wash the chimney; if once wet it will break as soon as the lamp is lighted. Clean it with a brush leather made for the purpose and sold with the lamp at the lamp shops. Wash the globe in soda and water. The lamp should always be lighted with a *wax taper*, as, if ends of lucifers fall in, or bits of burnt paper, they will make the inside of the lamp and the oil dirty and injure its efficiency.

The oil-can must also be kept very clean, as dirty oil will at once spoil a lamp. To clean the can, drain it thoroughly first—then take a small mop (such as is used for cleaning lamp-glasses) tie it tightly to a long stick, and wipe out the can well. Make a strong soap-lather, with carbolic or yellow soap, pour it into the can; rinse well with it. Then rinse thoroughly with clean water, and drain till dry.

Colza oil is used for this lamp; it costs 4*s.* 9*d.* or 4*s.* 6*d.* per gallon; half-a-gallon a week in depth of winter suffices for one lamp.

To prevent Lamps from Smoking.

Soak the wick in strong vinegar, and dry it well before you use it; this answers very well.

GAS.

Gas consists of light carburetted hydrogen, olefiant gas, hydrogen, carbonic oxide, nitrogen, vapour of volatile liquid, carbides of hydrogen, vapour of bisulphide of carbon.

Great care should be taken in the use of gas—a tap left unturned may cause the most serious accidents—kill a servant, or blow up a room. If by any chance it has escaped, windows should be at once opened to admit the atmospheric air, and let it escape, and it should be turned off at the main. We are of opinion that this should always be done at night, as in case of fire its presence in the pipes might prove dangerous, should a portion of them melt. The *dry* meter is the best.

The quantity of gas used can be noted and checked from the dial-plate in front of the meter.

Ventilation is especially required where gas is used, as it poisons the air, and blackens furniture and paper very much where ventilation is wanting.

The price of gas varies from 4*s.* 6*d.* to 3*s.* 6*d.* the thousand feet.

Light from Gas.

Although chimneys are essential to argand gas-burners, and globes also in many places where fish-tail burners are used, and the ornamental

* If unevenly cut the lamp will flare, and the flame will come above the chimney.

effect is pleasant, still they are detrimental to the diffusion of the light of gas. A clear glass globe obstructs about 12 per cent. of light; a clear globe engraved with flowers about 24 per cent.; a globe ground all over 40 per cent.; an opal globe 60 per cent. Hence the folly is apparent of using elaborately engraved and ground glass globes or shades where it is desirable to economize. If engraved at all, the upper portion of the globe only should be embellished, while the lower part should be left clear for the free passage of light.

Effect of Gas on Steel Pens.

When the pen has been written with, and appears spoiled, place it over a gaslight, for a short time—say a quarter of a minute—then dip it in water, and it will again be in good condition to write with. Also any new pen which is too hard to write with, will become softer with being heated in the same way.

THE CHINA CLOSET.

Two hundred years ago china was the Englishwoman's passion; the fancy for it was carried to an extent of folly satirized by most of the writers of the day. "There is no inclination in women," says Addison, "that more surprises me than this passion for china. When a woman is visited with it, it generally takes possession of her for life. China vessels are playthings for women of all ages. An old lady of fourscore shall be as busy in cleaning an Indian mandarin as her great-granddaughter is in dressing her baby."

"If you were to come into my great parlour," says a correspondent of the *Spectator*, "you would fancy yourself in an India warehouse. Besides this, she (his wife) keeps a squirrel, and I am doubly taxed to pay for the china he breaks."

"And mistress of herself, tho' china fall'

was considered *then* the height of womanly endurance.

Even men shared in this taste as collectors, and of Horace Walpole it was said—

"China's the passion of his soul,
A cup, a plate, a dish, a bowl
Can kindle wishes in his breast,
Inflame with joy, or break his rest."

The taste still lingers amongst collectors, though generally kept within reasonable bounds; there are still ladies also who treasure their heritage of old china—and with reason. The ceramic is assuredly a charming art, and true taste will always delight in the artistic beauty of the exquisite porcelain of Dresden, Sèvres, Berlin, Capo di Monte, and our own old Chelsea. There is a china closet in most old family dwellings, in which are garnered the ancient possessions of ancestors and friends, of the value of which too often the possessor is ignorant. A few words on pottery and porcelain may therefore not be unwelcome to our readers.

Pottery—the manufacture of vessels of all kinds from clay—is a very ancient art, cultivated long ere sculpture or painting had charmed the

world. Early in Scripture the potter is named, and many are the similitudes furnished by his art.* The second king of Rome, Numa Pompilius, founded a potters' college, and the art was held in honour by all the ancient nations of the earth. The funeral pottery found in tombs, and easily assignable to the people who were its makers, has been of the very greatest service to the historian; it ascertains for him the limits of Greek and Roman dominion, and of Mahometan sway, while the degree of civilization, and domestic habits of nations can be tolerably well learned from

Sèvres Porcelain, French Exhibition, 1867.

the same source. But we have to speak of china as a charm of the home, not as an object of antiquarian research. And first of all, the exquisite Oriental china, which has never been surpassed in quality, occurs to us. The Chinese first brought the ceramic art to perfection; and the celebrated porcelain tower near Nankin, is a lasting memorial of their devotion to it. The glazed tiles of this tower are of *fayence*, covered with brilliant glaze, and a legend says that a human life was given to achieve the manufacture of this species of china.

A Chinese Emperor ordered porcelain tiles to be manufactured of a size and kind which the workmen found it impossible to produce. The sovereign would not however hear of an impossibility, and the mandarin who had to enforce the imperial command, endeavoured to goad on the workmen to its achievement by means of cruel punishments; one of them overcome at last by despair, leaped into the glowing furnace, and was consumed. When the same furnace was afterwards opened, the porcelain was found exactly that which had been required, and from that hour the man who had thus perished was worshipped by the potters as their tute-

* Psalm ii. 9. Isaiah xlv. 9; lxiv. 8. Jeremiah xviii. 6; xix. 11. Rev. ii. 27.

lary deity. The funny little corpulent figures called *magots* are images of this deified workman.*

The Portuguese traders were the first who introduced the fine wares of china into the trade of Europe, though single specimens of it as gifts to royal persons, etc., had before found their way here. It was the Portuguese who gave it the name of porcelain—*i.e.*, *Porcellana.* Its glossy whiteness reminded them of the pearly lining of the cowrie shells which were (and are still) used as money in the East, and as they called these shells *porcella*, or "little pigs" (from the likeness of their shape to the back of that animal) they transferred a modification of the name to the china. They enjoyed a monopoly of the trade in it for some time; and when they ceased to possess it the Dutch obtained it and kept it long.

The first Chinese porcelain brought into England is believed to have been presented to Queen Elizabeth by Cavendish, the celebrated traveller. That the great queen had a true woman's taste for china we may infer from the New Year's gifts made to her in 1587-8 when Lord Burghley presented her with "one porringer of white porselyn garnished with gold," and Mr. Robert Cecil gave her "a cup of grene porselyn." These gifts were probably purchased from seamen who had captured Spanish carracks, and who disposed of this part of the cargo; for there was no trade in china till the East India Company had formed their first establishment at Gombron.

Nankin Porcelain is blue and white; the clearness of the white and fineness of the blue determine its value.

The old sea-green or *Céladon* is very valuable. So also is the transparent china called "egg-shell" china, which is wonderfully thin and fragile. A sister of the writer possesses some cups of it which are perfectly transparent. The citron-coloured and ruby are extremely rare, being made only for the Emperor's use; they are not allowed to be sold publicly.

JAPANESE CHINA is superior to Chinese in the quality of the paste and the colours, which are generally blue and red—some is of lacquered ware, with subjects in mother-of-pearl.

MAJOLICA is Italian pottery, sometimes known under the name of Raffaele ware or Umbrian ware. It was manufactured, it is believed, in imitation of the Moorish pottery taken by the Pisans from Majorca. Hence its first name. Afterwards it was called Raffaele ware because it was decorated with paintings from the copper plates that the great engraver Marc Antonio printed from the famous Raffaele's works.

PALISSY'S POTTERY (French) is also greatly valued. The story of his lifelong struggles, of his discouraging wife, and his death in the Bastile, are familiar to most readers from the pretty tale called "Madame Palissy's

* A very intelligent little Chinese girl told the writer some four or five years ago, that a female infant is sacrificed still at times for the success of the porcelain manufacture. The child is told to look at some wonderful thing in the furnace, and is then pushed in. "They think," she said, in her broken English, "that china sure to come out very good then." It was evidently a tale heard in the nursery; but considering the amount of cruelty and superstition known to exist amongst the celestials, it is not impossible that it may be true. In fact the worship of the unfortunate Pousa may have given the Chinese potters the idea of such a sacrifice.

Troubles." Palissy's fayence is decorated with subjects in relief, never with flat painting. The colours are usually yellows, blues, and greys—sometimes violet, green, and brown. His plates, dishes, etc., represent the fossil shells, reptiles, fish and plants of the neighbourhood of Paris. But these are not all his works. There are statuettes, cups, salt-cellars, incense burners, and baskets by him of great beauty.

The Fayence of Henry II.'s time is wonderfully beautiful and much valued. It is made of a hard paste, while the Majolica and Palissy ware are both of soft paste. Majolica is covered with a thick coating of enamel. The Fayence of Henry II. (French) is only covered with a thin transparent yellowish glaze—dark yellow is the predominant colour of some of its patterns. Its decorations, in relief, are generally pink.

Porcelain is composed of two substances—alumina or *clay*, called technically *Kaolin*, which cannot be melted by heat; the other felspar or petro-silex—called pe-tun-tse—which will vitrify in heat. Hard paste porcelain is composed of a greater proportion of alumina and less of silex. It requires greater heat in the furnace, and is of a denser substance than soft paste porcelain. The soft paste porcelain has more silex with the addition of alkaline fluxes, and therefore requires less furnace heat and is less dense. It is easily scratched by a knife. Porcelain is in short a substance between earthenware pottery and glass.

The first European hard porcelain was made at Dresden, under the auspices of Frederick Augustus I. Elector of Saxony, and afterwards King of Poland. The circumstances attending the Saxon discovery of the art are remarkable.

There dwelt at Berlin an apothecary's assistant called John Frederick Böttcher, who was suspected of being an alchemist, and compelled to fly for safety to Saxony. The Elector Augustus sent for him, and demanded of him whether he truly possessed the secret of making gold. Böttcher denied any such power, but the Elector did not believe him, and placed him under the charge of the alchemist, Tschirnhaus, who was then employed by the prince in the search for the Elixir of Life and the Philosopher's Stone. Whilst working at the furnaces, Böttcher perceived in the contents of some crucibles a substance resembling Oriental porcelain. He communicated his discovery to the Elector, who perceived the importance of the discovery, and at once removed Böttcher to the Castle of Albrechtsburg, in Meissen, where (though he supplied him with all possible comforts and luxuries) he detained the poor artist a close prisoner till his death. The first attempts of Böttcher produced only a kind of red stone-ware; it was not till the occurrence of another accidental circumstance, in 1709, that he was enabled to manufacture *white* porcelain. The circumstance was this:—An iron-master of the Erzgebirge, named Schnorr, riding one day near Aue (in Saxony), found his horse's hoofs continually stick fast in a soft white clay. As hair-powder was in general use at the time, it occurred to him that this clay, dried and powdered, might be a substitute for the wheat-flour employed in the manufacture of it. He collected some of the earth, carried it to Carlsfeld, and had a hair-powder made of it, of which he sold at Dresden and other places great quantities. One of its purchasers was Böttcher. He noticed its singular weight in his hair; ascertained where it was bought, and that it was an earth, and at once tried it as a clay, or kaolin,

for his ware. It proved the right material for making white porcelain, and the great manufactory at Meissen was at once established by Augustus. This clay was known henceforth as *Schnorrische weisse Erde*, and was taken to the manufactory in sealed barrels by persons sworn to secresy.

Höroldt succeeded Böttcher as head of the Meissen manufactory in 1720. In 1731, Kändler, a sculptor, superintended the modelling, and the art rose to a great degree of perfection. The best productions of Kändler were the "Lute Player," representing "Hearing," from his allegorical groups of the "Senses." "The Broken Looking Glass," "Marriage à-la-Mode;" "The Love Letter," and several groups of children. Dresden figures have in fact ever since been famous.

Dresden candelabra have never been surpassed. A friend of the writer possesses two, on which the flowers are life-like. The "lace" on figures is of especial beauty. We have been told by a collector that it is real lace which is put into the clay, and reappears as lace in china. Berlin china stands second to Dresden in beauty of form and colour. The manufacture was commenced by Frederick the Great after his occupation of Dresden in the Seven Years' War. He established it by a shameful act of injustice :—He despatched large masses of the "Schnorrische" Kaolin, or clay, to Berlin, and sent off captive thither the best modellers and painters of Meissen, who were compelled thenceforward to toil in the service of the conqueror and inveterate enemy of their country. Nevermore were these unfortunate exiles allowed to return to their native land; their descendants or pupils are still the subjects of Prussia.

Frederick compelled the Jews to become his customers by refusing to allow them to marry till they had purchased a service of Porcelain from the royal manufactory, from the trade of which he obtained 200,000 crowns annually.

Berlin is celebrated for the manufacture of lithophanes, or transparent pictures in white porcelain. A sister of the writer possesses an exquisite nightlight-holder, and kettle, of the purest transparency; the light within exhibiting the most charming pictures perfect in light and shade. The Berlin Biscuit figures are also very charming.

English porcelain was chiefly of soft paste; that of Bow was coeval with Chelsea, to which it bears a resemblance. A bee is often seen on it, either embodied or painted on the handle or under the spout of the cream-jug.

Chelsea china was manufactured in Queen Anne's reign, but was not then remarkable for excellence. Under the patronage of George II. and the Duke of Cumberland (of Culloden memory) it rose rapidly to excellence; and in George III.'s time quite equalled Dresden china. Its colours are fine and vivid, especially the one peculiar to Chelsea, the claret colour. Paul Ferg, a German artist, and Beaumont painted the best landscapes on it. Foreign artists probably designed the birds, insects and flowers which enrich it.

The manufactory was situated at the corner of Justice Walk, and occupied the house at the upper end of Lawrence Street.

"The factory stood just below the bridge, upon the site of Lord Dartery's house. My father worked for them at one time," said Nollekens. "Yes," replied Betew, "and Sir James Thornhill designed for them. . . . . Paul Ferg painted for them. The cunning rogues produced

very white and delicate ware, but then they had their clay from China, which when the Chinese found out they would not *let the captains have any more for ballast*, and the consequence was that the whole concern failed."*

A very curious coffee-pot, supposed to have been manufactured for George II., is in the family of the writer. It has a silver spout and silver edges. It was used daily by the king; but (according to the fashion of those days) became, with all the other china and glass, a perquisite of the captain of his yacht after his Majesty's first or second voyage to Hanover.

Chelsea china is of great value, and sells for very high prices. Its manufacture ceased in 1765, whether from the merchant captains failing to obtain Chinese kaolin for ballast! or by the smuggling in of Dresden china at a nominal duty by foreign ministers, is not clear.

Worcester china is remarkable for its durability as well as excellence. Coalbrook Dale china (Shropshire) was more for use than ornament, but was nevertheless often beautiful.

French porcelain ranks very high. The royal porcelain manufacture of Sèvres was patronized by Madame de Pompadour. Difficulties in procuring the kaolin, or clay, for white porcelain at first impeded this manufacture, but the needful material was again discovered by chance, that is, if observation can deserve so to be designated. Madame Darnet, the wife of a poor surgeon residing at St. Yricix, near Limoges, perceived in a ravine through which she happened to be walking, a white unctuous earth. She must have been an intelligent woman, and anxious to reduce needful household expenses, for she thought it possible that this clay might serve as a substitute for soap; so she carried some of it home, and displayed it to her husband. He, in turn, showed it to a chemist at Bordeaux, who having heard of the researches then making for proper porcelain earth, sent the specimen to the chemist Macquer, who at once declared that it was true kaolin.

From that period the manufacture rose to great eminence. Our readers will be glad to learn that the good housemother, whose wise study of economy led to this discovery, finally benefited by it. Madame Darnet was reduced to great distress, living in poverty at Paris in 1825, when she applied to the celebrated M. Brongniart, the director of the Sèvres manufactory, for the means of returning on foot to St. Yrieix. The director brought her case before the king, Louis XVIII., who immediately assured her future comfort by granting her a pension from the Civil List.

Sèvres china is now the first in estimation. The colours used on it are remarkable for their unequalled beauty—the *bleu du roi*, *bleu turquoise*, *Jonquille*, *vert pré*, and lastly, the exquisite *rose du Barry*, a very lovely pink, are the principal tints. The paintings on it, by Watteau and other masters, and the jewelled cups† must be tolerably well known to the reader who has visited the South Kensington Museum, etc. Bouquets of flowers (the especial work of women) are ancient Sèvres, and of great value.

* Life of Nollekens.

† Only genuine when the colour is *bleu du roi*.

The Capo di Monte china is very beautiful and very easily recognised. It is quite an original china, unlike that of either Germany or France. It is decorated in the very highest relief, and the figures are most exquisitely moulded. The late George Smith, Esq., of 21, Russell Square, well-known for his generous patronage of art, and his skill and judgment in collecting, possessed (his widow still possesses) two Capo di Monte vases of great beauty. The figures are in such high relief that they appear scarcely attached to the side of the vase, and cast light shadows upon it in some places; the paste is of wonderful excellence. The subjects are a vintage feast, dancers, &c.

The marks by which the china we have described may be known have now to be mentioned.

Oriental china is marked in two ways, either by Chinese characters which fix the reign or dynasty under which the piece was made, or by the marks of the several factories or those of the makers of the pieces; these are various, and the Chinese characters are unmistakeable (several works on the subject give the marks chronologically). The acorus or the sweet rush, the Gladiolus, the numerical 1 (—) and 2 (=), fish, a small thin nail, the flower of the plant Lesance, a kind of grain, two lions playing with a ball, two ducks painted in the centre of the vase, grasshoppers or crickets fighting, a hen and chickens, are all marks to be found on Oriental china, and fix with some accuracy its date; but as our limits will not permit us to give them all, we refer our readers for information to Marryat's "History of Pottery and Porcelain," a most valuable and exhaustive work, and to Mr. Bohn's volume on the same subject.

Majolica and Palissy ware (which are pottery and not porcelain) are easily recognisable from their peculiarities.

The marks on Dresden china are A.R., signifying Augustus Rex; K.P.M. (Königlich Porzellan Manufactur); the caduceus; the Electoral swords crossed. The period when the King was the actual director of the manufactory is marked by the crossed swords having a dot between their handles; sometimes there is a star between the handles, signifying that Marcolini was director when the piece was made.

Berlin porcelain has as marks a W, two strokes of the letter being too short and the centre strokes irregularly crossed like an X; a sceptre in brown, if the porcelain be painted and gilded; in blue, if the porcelain be white. Since 1833 the marks have been the sceptre, eagle, and imperial globe in brown, on painted and gilded porcelain, and the sceptre and letters K.P.M. (Königlich Porzellan Manufactur), in blue, if the porcelain be white; another is an eagle burnt in colour on the bottom.

Dutch porcelain of the Hague has for mark a stork standing on one leg with a fish in its mouth.

The porcelain of Denmark, which is at present excellent, is marked with three parallel wavy lines signifying the Sound and the Great and Little Belts.

Swiss porcelain is marked with a fish.

Bow china has a triangle.

Of Chelsea—the earliest had no marks—by-and-by came an embossed oval with a raised anchor on it—an anchor and cross, and next the red and gold anchor. The gold anchor signifies the best Chelsea porcelain.

Two anchors were sometimes stamped on it, and three dirty spots without glazing on the bottom of the piece also characterize this porcelain; they were caused by the clumsy tripod on which it stood in the furnace.

Sèvres china marks are easily understood, for the *name* is frequent, and royal cyphers, eagles, crowns, fleur de lis, and N with the crown imperial at once distinguish it.

The Capo di Monte marks are a figure resembling a flower with a short curled stem; a crown with a wide N under it; a tiara like an earl's coronet with N under it. These marks are painted in blue or red, or graved on the moist clay.

Plymouth china has for its mark the astronomical symbol for Jupiter. The wares in household use in England at present are the Oriental, Japan, Dresden, and Sèvres, English porcelain made at Worcester and in the potteries of Staffordshire; iron-stone and stone china—a very hard and tough kind with little or no transparency; semi-porcelain made for cooking and chemical operations, and earthenware—which is known as Wedgwood's, delft ware, etc.

Wedgwood ware has been brought to great perfection. Delft is an imitation of the famous Dutch pottery which was in ordinary use in England from the reign of our Henry IV. till Wedgwood's superior production put an end to the delft trade of Holland. The Dutch tiles which were formerly used for lining fireplaces, dairies, etc. are well-known. They came into fashion in England in 1625—Charles I.'s reign.

The materials for English earthenware and porcelain are silica, procured from the flints of the Sussex coast and from Antrim in Ireland; alumina from different sorts of clay—from Bideford and the Isle of Purbeck come two *pipe clays*. A china clay (an extremely white and impalpable powder) is found in catchpools in Cornwall. Magnesium clay, slate and shale clays are also used, and *bone earth* which is made by removing the gelatine from bones by boiling, and then calcining and grinding them. The process of making pottery is a long one—first the clay is prepared, next *thrown*, as it is called; turned, modelled, or pressed; baked into biscuit—painted or printed, glazed and ornamented.

Washing China.

Valuable china, such as Oriental, Dresden, or Sèvres, should never be trusted to the housemaid to dust or wash; a lady of the family should do this task herself.

For Dresden china, rich in groups of flowers, etc., a soft tooth-brush may be required for the very intricate and embossed work. Wash it in very clean COLD water, use a little soap, rinse in cold water, and dry with a soft wash-leather. Take care to wash it in a wooden bowl, as an earthenware basin might possibly crack it. Sèvres vases, Oriental china, etc., should be washed with a soft sponge in cold water; soap is seldom required, nor washing often, if china is carefully dusted: never use soda, it will injure gilding and fade colours.

For washing ordinary china in daily use for breakfast or tea, use very hot water in a wooden bowl. Dip one cup in at a time, wipe it in a clean

and *dry* linen cloth. The hot water and *separate* washing will give a polish; never use soda for fear of injuring the gold or colours. The dirty habit of putting all the cups in a pile, draining on each other, in the wooden bowl should never be endured. The cups are never freed from grease when washed in this manner; they are always dull-looking and sticky. One cup at a time and a clean *dry* cloth should be the rule. Mr. Bamfield of the Crystal Palace says, half the china made is defaced and injured by the use of soda.

Accidents in spite of every care will occasionally happen to china. The readiest way to mend a fracture is to take instantly the white of an egg, brush it over the edges with a feather, replace the piece, and tie it together with a piece of tape till it dries; this cement will hold the cup or plate together so long as it *is not wet.*

A strong and lasting cement can be made from white flint. Get a chemist to make you some white flint powder, and mix it with resin to the consistency of a paste. Keep it for use. The mode of applying it is to heat the edges of the fracture and piece, rub the cement on them, and join and tie them together. When dry remove the cement which remains outside the edges. Or, beat lime into the most impalpable powder, sift it through fine muslin; then tie some into a thin muslin; put on the *edges* of the broken china some white of egg, then dust some lime quickly on the same, and unite them exactly. The Chinese use finely powdered *flint* glass with the white of an egg.

THE LINEN PRESS OR CLOSET.

The linen press or closet should be in a *dry* place. Each shelf should be covered with clean brown paper, and on it should lie a large muslin bag full of lavender, and a small one of camphor. A book should be kept in one corner, in which the entire contents of the closet should be entered, the number of the shelves stated, and what is on each.

Stick papers with number on the edge of each shelf.

This closet must contain all the household linen (lists of which are given a little further on); the extra blankets or bedding; the counterpanes and quilts; all pieces of bed furniture; curtains not in actual use; muslin curtains; pieces of paper-hangings, and general odds and ends.

The air should be frequently admitted to the press or closet, and nothing damp should be put away in it.

LINEN is made from flax, the straw of a European plant which has a pretty blue flower. This straw is deprived of its juices by maceration and washing. It is afterwards bleached, spun, and converted by weaving into plain linen—more or less fine—damask, Holland, and lawn.

COTTON is a vegetable down contained in the seed of the cotton plant, which is cultivated in America, the East and West Indies, and Egypt. Cotton, after many processes, is woven into calico, muslin, chintz, dimity, etc.

Linen is much more expensive than cotton, but it wears a great deal

longer. Cloth made of flax is clearer than that made of cotton, and very cold to the touch. Cotton is whiter, thicker and warmer to the touch.

Linen should be purchased at a trustworthy shop, as table-cloths and diapered articles are often adulterated with cotton.

House linen should be nicely marked with the united initials of husband and wife, and the number of purchase. By number we do not mean 1, 2, 3, but *on each* article the number of which the set consists, as 12, 24, 36, as it may be. Example—A B C, 24,1872 ; or A B C, 36, 1872.

A good store of fine linen was once the pride of Englishwomen, as well as of the Scotch, and to the fact that a maiden must spin her own linen for her future home before she was deemed meet to be a wife, we owe the word *spinster*—equivalent to maiden. The pride in household linen, like many other good household feelings, has nearly passed away in some circles ; but the true housemother who cares for the comfort and beauty of her home, will still feel a matronly pride in her linen closet.

Linen consists of sheets, pillow-cases, tablecloths, table-napkins, towels, quilts, etc.

By persons of very small income only a small quantity of linen can be bought at a time, as it is expensive. For *two* beds, four pairs of sheets will suffice ; for three beds, *five* pairs, as the changing may be so managed that the two extra pairs will suffice ; but when there is only a small stock of linen, it soon wears out, and has to be replaced ; if, therefore, the outlay can be spared, a good stock will be found most economical. If however only a few articles of household linen can be afforded at a time, it is well to lay by a small sum *constantly*, with which an occasional purchase of a sheet or tablecloth may be made. The following are three lists of linen for different incomes :—

Smallest Quantity.

6 pairs of good cotton sheets.
6 pillow cases (untrimmed.)
3 dozen bedroom towels, part rough, part soft, part servants' towels.
4 tablecloths
1 dozen table napkins.
2 kitchen tablecloths.
12 coarse kitchen towels.
6 glass cloths.
12 dusters.
2 roller towels.
4 counterpanes, or one for each bed. and two for change.
4 toilette covers.

Medium Quantity.

12 pairs of linen sheets (unless cotton are preferred.) These include servants'.
2 dozen pillow cases, frilled.
6 dozen bedroom towels (2 dozen of which may be bath towels, and 1 dozen servants' towels.)
12 tablecloths.
24 table napkins.
6 kitchen tablecloths.
6 roller towels.
4 dresser cloths.
12 coarse kitchen towels.
12 glass cloths (linen.)
12 toilette covers.
24 dusters.

Good Quantity.

24 pairs of linen, cotton, and servants' sheets.	12 breakfast cloths.
24 pillow cases edged with lace, and plain for servants.	6 kitchen tablecloths.
12 bath towels	36 table napkins.
24 fine towels.	6 roller towels.
24 coarse and servants' towels.	4 dresser cloths.
24 toilette covers.	24 coarse kitchen towels.
18 tablecloths.	24 glass cloths (linen.)
	14 dusters.

Nursery linen is not included in these lists.

SHEETS should be 3 yards long and two breadths wide (if they are not made of full width linen). Some persons prefer cotton sheets to linen on account of their superior warmth; old East Indians seldom use anything but "India sheeting," as it is called, which is of fine twilled cotton. Linen sheets last longer, and are fresh and cold to the touch. The housemother should have both in her possession, as it is possible some guest, or one of her family, may be unable to sleep on linen, from delicate health, rheumatic affections, etc. Servants' sheets are generally of cotton. Sheets should be *thoroughly* aired the day they come from the laundress, and then folded in pairs for the closet. In one pile should be placed the fine linen sheets ; in another the coarser linen ; in a third, the cotton ; in a fourth, the servants'. The sheets should be lifted up, and the last washed sheets as soon as aired should be placed at the bottom of each pile. Thus each pair will be fairly worn in turn. A ticket should hang from the shelf containing a list of the sheets on it. They must also be entered in the linen book.

Before the sheets are sent to the wash they should be carefully examined, and mended if they require repairs. If they have grown thin in the middle the centre seam must be unripped and the outside seams be turned inwards and sewn together; or if (as is now usually the case) the sheet is made the whole width, it must be cut very carefully and evenly by a thread, down the middle, and the sides joined inwards. In both cases the outsides must be neatly hemmed. When they are *again* worn in the centre they may be cut *across the length*, and the short ends sewn together in the middle.

A sheet quite worn out for the bed will still make pillow-cases, dusters, etc. etc., and the pieces will be of use for cleaning lamps, candlesticks, etc.

PILLOW-CASES may be made quite plain, with strings, or trimmed prettily with frills or lace. Very grand pillows are sometimes edged with Valenciennes.

Huckaback towels are excellent for drying the skin, and produce (by rubbing) a fine glow. The unbleached material is to be preferred, and it should not be fine but thick and loose in texture. It is about 8*d.* the yard. Eighteen nails is the length for a towel.

Russian towelling, called by drapers "crash," is a strong material, but narrow in width. It costs about 5*d.* a yard.

Towels are fringed by ravelling out a little of the edge, and loosely

E 2

sewing over the threads which end the fringe. Many people prefer this mode to hemming them.

Bath towels can be purchased the full size, but a small sheet is much more comfortable in the bath room, as one can step into it at once, and there is less chance of chill if the bath is a hot one ; but for ordinary use it is enough to sew two ordinary towel widths together. It is a good plan if it can be managed to mark every room's separate towels.

The towels, sorted into piles of fine, coarse, bath, and servants', should occupy a shelf with a ticket attached to it stating the number of towels on it ; they should be *aired* when they come from the wash, because linen put away damp is sure to rot ; and when aired each pile should be lifted and the last washed towels should be placed at the bottom.

TABLECLOTHS may be of great beauty, or merely nice and useful. A tablecloth and napkin press is necessary in order that the tablecloth may be kept smooth for use.

Tablecloths and table-napkins should be examined every week before they are sent to the wash and all thin places *finely darned* with soft cotton, every other thread being taken. Any stains must be taken out. Tablecloths are very liable to accidental stains ; port wine upset on them is one. When such an accident as upsetting port or claret on the cloth occurs, instantly throw some salt on the spot and pour a little sherry on it. Let the servant wash it the moment the cloth is removed.

Ironmoulds can be taken out by wetting the spot, stretching the linen over a plate placed over a basin of boiling water, and touching the place with salts of lemon ; keeping the plate very hot. As soon as the stain is removed, wash in a good deal of hot water.

To take out stains of acids, fruits, etc., rub the place each side with yellow soap, then lay on a paste of starch made with cold water, rub it in, and bleach the linen in the sun till the stain comes out. Scorches may be removed from linen by spreading over them the following mixture :—Juice expressed from two onions, half an ounce of white soap, two ounces of fuller's earth, and half a pint of vinegar ; mix and boil well. Let it get cold before using it.

GLASS CLOTHS must be of thin linen. Both these and the coarse brown towels should be a yard long. Not more than twelve should be given out to the servants at a time, and the mistress of the family should inspect them once a month, to see that they are well kept. There is nothing in which more loss and waste occurs, than in kitchen towels unless they are looked after and examined. When worn, *the rags* should be produced, as careless servants will occasionally throw away a towel rather than wash it if it is very dirty—the kitchen servants wash the coarse towels ; the housemaid washes the glass cloths.

Kitchen tablecloths are generally made of unbleached cotton diaper, but huckaback will be found cheapest in the end, as it lasts so much longer.

Dusters may be made of *old* sheets, old chintz, or any remains of cotton dresses—they are best of cotton ; but whether of new material or old, they should be hemmed.

Pudding cloths should be squares of thick *new* Russia sheeting. For dumplings, squares knitted in coarse cotton, will give a pretty effect. These also should only be given out in certain numbers, and the old ones

shown when new are asked for. The eye of the mistress should often inspect the cleanliness of these cloths.

Fish cloths are made of a species of inferior table-napkin. Many persons now prefer the embossed bordered fish papers, which cost no more than the washing of the fish cloth, and look pretty. They are certainly an economy.

Jelly bags are made of a half-handkerchief shaped piece of flannel, the two sides sewn together strongly, and the top hemmed, and tape loops put to it to hang it up by, or it is in a frame; but if a small outlay does not signify, it is better to buy a jelly bag.

Scouring flannels should be strong and coarse, the edges should be just caught round to save them from fraying out.

In the linen press or closet should be kept needles, cotton, white and black thread, (coarse thread, we mean, for carpets,) curtain rings, patent curtain hooks which require no sewing on (they are in the fashion of the safety pins invented by the Queen), string, binding, etc., and a large pair of cutting-out scissors. These articles may be kept in a large brown holland bag suspended from a nail in the door; it may also contain a pencil for making any alterations in the linen lists.

Linen is usually marked with ink. The following is Mr. Redwood's receipt for making marking-ink to be used without preparation :—

One ounce of nitrate of silver, one and a half-ounce of best washing soda, three drachms of tartaric acid, two ounces of distilled water, six drachms of white sugar, ten drachms of powdered gum-arabic, half an ounce of archil and water.

Dissolve the nitrate of silver in distilled or rain-water; distil the soda (separately) in rain-water. Mix the solutions, and collect the precipitate; wash it in a filter. Whilst it is still moist, rub it in a mortar, with three drachms of tartaric acid; add the two ounces of distilled water. Mix, and add the white sugar, gum-arabic, archil and water, to make up in all six ounces.

The cost is a little over 5*s.*, but the quantity makes twenty-four bottlefuls of the usual or 8*d.* size. Use a quill pen, and expose to the air.

We give this receipt because our book may possibly travel where marking-ink cannot be bought; but we recommend for English use the purchased ink as the best. That which requires preparation, and the heat of a hot iron after it is used, lasts much the best. We speak from experience. We give an excellent receipt for one, with preparation, long used in the family of a friend.

Marking Ink.

One drachm and a half of lunar caustic, one scruple of sap-green, six drachms of water, two drachms of mucilage.

The Preparation.

Half an ounce of subcarbonate of potash, half an ounce of mucilage, half an ounce of water.

This preparation is to be applied to the linen with a brush; when it is nearly dry, rub smooth with the bowl of a spoon and write on the spot with the ink.

To restore Scorched or Discoloured Linen.

For discoloured linen or muslin, grass or seaside bleaching is always the best; but in town, mix a pound of bleaching-powder with six quarts of water, and put a portion of this into the tub where the articles are steeping.

To take Stains of any kind out of Linen.

Stains caused by Acids.—Wet the part, and lay on it some salt of wormwood. Then rub it without diluting it with more water.

When white linen becomes mildewed it should be washed in warm water, with a little borax, and then rinsed in clean water. After this, it must be put into a tub of water, containing a little hydrochloric acid; then rinsed and dried in the sun.

To take Mildew out of Linen.

Wash the linen well in warm water with soap; then scrape some chalk very fine on it, and lay it on the grass in the sun; as it dries, wet it a little. The mildew will come out after twice doing this.

To take out Fruit Stains with Chloride of Soda.

Wet first with cold soap and water, touch with chloride of soda. Wash again immediately. *See* also "Laundry," and its receipts.

ORNAMENTATION.

The taste of a lady is shown especially in the ornamentation of her apartments.

The best ornaments (available for poor as well as rich) are flowers. They will enliven the dullest room, and bring nature and beauty into the heart of a smoky city.

The power of arranging bouquets with taste and judgment is a gift not bestowed on everybody, but it may be in a great degree acquired by observation and care. The skilful grouping of colours is first to be considered. Scarlet and white—*i.e.* scarlet geraniums with white cloves and jessamine—will be found very effective. The long wavy stems of the jessamine greatly relieving the flatness of the other flowers.

Bouquets composed entirely of many-tinted roses are wonderfully lovely. A straw basket filled with roses and lilies (*see plate*) may be made a most charming ornament; but some people cannot bear the strong perfume of the tall lily—nor even that of lilies of the valley.

Bouquets of *set* flowers, as zinnias, carnations, asters, should always have the centre raised with thin tapering flowers—as sweet-peas, jessamine, clematis, etc.

A china bowl filled with roses is very pretty.

Large soup-plates, or dishes filled with wet sand, will hold dahlia blossoms, and show them to great advantage. There are also tables

1. *Crystallized Bouquet.* (for Winter.)
2. *Fruit & Flowers.* (for Summer.)
3. *Ice & Flower Centre.*
4. *Ring of Flowers.*
5. *Ring of Flowers.*
6. *Spring Bouquet.*
7. *Rose Basket.*

made for the purpose covered with a wire netting which, filled with dahlias, are very beautiful.

A majolica vase, large enough and round enough to be filled with earth, may be planted with snowdrop bulbs round the edge, and filled in the centre with tulip-roots. These will bloom in spring, and form a charming and lasting bouquet.

Tiny specimen glasses for rare flowers, containing a single magnolia, a choice rose, or new geranium, should stand about on the tables.

The new glass half-rings for flowers are also well adapted for displaying small flowers, such as yellow primroses, evening primroses, and violets in moss—all being put into wet sand. These may be formed into patterns in the rings (*see plate*) one half-circle of violets, the next of snowdrops, the next of yellow primroses, then heartsease, primulas, or nemophila. The interstices filled in with any rare bits of green and brown moss, with here and there a few scarlet blossoms.

In winter the rings may be filled with moss, red berries of holly, hips or haws, and the yellow and white immortelles, Russian violets, and Christmas roses. They may be also arranged to look like a twisted wreath by placing them in curved lines (*see plate*).

Tulips in tiny pots, placed in moss on one of the glass stands now sold for flowers, are pretty. Overhanging fern leaves give a grace to stiff bouquets, and are indeed always beautiful.

In the centre of the annexed plate will also be seen a pretty ornament for a stand in summer. It is a glass stand with a deep bowl-like bottom, surrounded by a rim for flowers. In the bowl, water-lilies are laid; on the second glass-round, which is nearly flat, other plants are placed; on the flat glass top is placed a small block of ice crowned with, and surrounded by, violets. As the heat of the day melts the ice, it flows down on the flowers on the stands below, and gradually floats the water-lilies. The ice, of course, must be in exact proportion in size to the water which the lower bowl will contain. Placed on a table in the hall, this bouquet will produce a delightful freshness of the air round it.

For a winter bouquet, nothing is prettier than crystallized twigs and evergreens, which sparkle in the light like diamonds.

We give the following receipt for one of these bouquets:

To Ice Evergreens.

Dissolve alum by boiling in hard-water, in proportion of a pound to a quart. Pour it into a deep vessel, and as it cools the alum will be precipitated. Choose light sprays, and hang them with the stems upwards on cords stretched across the top of the vessel so that they do not touch the bottom; they will attract the alum in the process of crystallization like the threads in sugar-candy. The warmer the solution when they are put in the smaller will be the crystals attached to them, but care must be taken that it be not hot enough to destroy the leaves or fronds; and, if there be berries, like holly, it must be hardly lukewarm. The same solution warmed again will do two or three bouquets.

To Frost Leaves and Sprays.

Purchase, at any glass manufactory, a few pennyworths of *powdered glass*, or powder some pieces of broken glass, by breaking or rolling them yourself; but beware lest any chips of the glass get into your eyes (which should be covered with a gauze veil to protect them while you roll and pound the glass); dip the leaves and sprays in a thin gum-water; then shake the powdered glass over them and let them dry. The effect is wonderful.

To make Snowflakes.

Dip pieces of cotton-wool, the size of snow-flakes, into weak gum-water. Dust them over with glass-powder. These flakes are pretty for Christmas ornamentation of all kinds.

Flowers should be gathered early in the morning, but not till the dew is nearly dried off them. They should be placed in a flat basket, or on a tray, so as not to press upon and crush each other, and they should be neatly cut, and not mangled or bruised. When thus gathered, they should be covered with a sheet of paper, and immediately conveyed to the apartment where they are to be used, if that apartment be near at hand. But if they are to be sent to any distance, they should be placed in tin cases, such as botanists use when collecting specimens.

DOMESTIC SCIENCE.

We believe that the mother of a family might derive much assistance in her domestic rule, and might be a gainer in many ways, did she possess a knowledge of certain natural laws, and the consequences resulting from either violating or obeying them. It is surprising how little scientific knowledge is possessed by women; yet it is most essential for the ruler of a small kingdom such as that of the family, to know the various awful powers of nature which affect life, health, or, at the very least, domestic comfort, and which are always acting in the midst of the dear circle of beloved beings to whom she would fain be as a guardian angel. It is terrible to think that her ignorant love may be actually injuring those whom she would willingly die to serve; yet such is too often the case. The following pages are meant to explain a few scientific matters which ought to be known to everybody. They will, we trust, be of service in showing the reason why certain things should be done or avoided, and also why so many circumstances occur to mar our home comfort in the most useless and foolish manner.

Natural laws will be stated in plain and unscientific language. It is hoped that the subject may awaken sufficient interest in the minds of those readers to whom it may be in any way new, to induce them to study natural science in works devoted to it.

We shall begin with the mighty power, without which our life itself would cease.

HEAT.

Heat travels with light from the sun, but it can be produced by friction—by percussion—by chemical action—by electrical action—by vital power. "Pouillet has carefully ascertained," says Professor Pepper, in his admirable "Cyclopædic Science Simplified," "the total heating effect of the sun's rays upon the earth ; and estimating the whole heating power of the sun as 2300 millions of parts, he calculates that less than one of those parts only reaches our earth, and yet it would melt a layer of ice thirty-five yards thick over the whole surface of our globe. This proportion of heat is not all available : some of it is at once converted into power by setting the air in motion, to create the winds ; another portion raises the water of the ocean into vapour, which, descending in the form of rain on high levels, such as the mighty water-shed which supplies the great lakes (discovered by Speke and Grant and Sir Samuel Baker), which are the sources of the Nile, flows down to the lowlands, giving rise to water power, which is again the equivalent for heat. Another part stimulates and increases the growth of plants ; and thus in ages long since passed away, the heat of the sun's rays was not all lost, as the elder Stephenson insisted, but was stored up ready for man to use in another form—viz., coal. It was therefore called potential heat. The plants, being the food of animals, again contribute to the production of animal heat and muscular force. The sources of heat are all connected with motion of some kind.

"*Friction* is a notable illustration, and it was by causing two pieces of ice to rub one against the other that Sir Humphry Davy *generated* heat, and liquefied the ice. Like Dr. Young, who proved that light could turn a corner, and established by his experiments with inflection a sort of basis upon which the undulatory theory of light was again reconstructed, so this famous experiment of Davy supplied a great fact, and gave the first blow to the old theory which said that the ice melted because latent heat was made sensible heat, when it was well known that water at a temperature of 32° Fahrenheit contains much more heat than ice ; how, then, could the ice, already deficient in heat, supply enough to satisfy the condition of water ? There are plenty of illustrations of the generation of heat by friction. The flint and steel ; the attrition of dried wood, as used by savage tribes ; the famous experiments of Count Rumford whilst boring cannon, when enough heat was generated in two hours and a half to cause two and a half gallons of water to boil ; the friction of railway-wheel axles, which have been known to become red hot and to set fire to the woodwork of the carriage. In North America, a case is quoted where heat was intentionally generated by waste water power and used for heating purposes, the generator being two flat plates of iron which rubbed against each other.

"*Percussion.*—It was said formerly that metals when struck with a hammer, or with a die in the coining-press, became hot because their density was increased, and therefore their capacity or containing power for heat was altered ; but it is clearly shown that this is not the true explanation. Lead, for instance, which becomes hot by percussion, does not increase in density and yet becomes hot—so hot that when projected from

the steam gun, in the form of bullets, against a wrought-iron target, a flash of light is apparent in a darkened room. The heavy shot used for battering iron plates always becomes very hot after it has struck the plate.

"*Chemical Action.*—The bringing together of a number of atoms, however small, the clashing together (as Tyndall calls it) of particles to produce new compounds, as in the heating and combustion of finely powdered antimony when it is brought in contact with chlorine gas; or the heat generated by combustion or from other chemical changes, are all to be regarded as the result of motion which the eye cannot detect, but which must occur before the elements come in contact, combine, and form new compounds. There are many chemical changes accelerated by motion, and hence the stirring-rod is an important mechanical means to secure the more rapid union of particles.

"*Electrical action* is, of course, circulation, or motion."

Vital power is heat generated by chemical action—it is very slow combustion; we call it *animal heat*, without the presence of which in our bodies life would cease. This heat is caused (in scientific language) by "the combustion or burning of hydrogen and carbon in the capillary vessels."

The capillary vessels are vessels as small as hairs, from which they take their name: Capillaris is a Latin word meaning, "like a hair." These vessels run all over the body. We all know that wherever we prick or cut ourselves, blood will flow; no part of the body is exempt from this flow of blood, even if it be but the speck covered by a pin-prick. The blood flows from these tiny vessels. The blood in them contains hydrogen gas and carbon. By breathing we inhale (or ought to inhale) oxygen gas; this gas combines with the carbon in our blood, and causes combustion or heat by forming carbonic acid gas. Thus a constant fire is kept up within the human body; if it failed from *want of food* (which makes carbon), or from want of oxygen (pure air), we should perish. Animal heat is not very high, not hotter than 90 or 104 degrees; nevertheless, it slowly consumes the body; every muscle, nerve, organ is wasted away by it, and has to be perpetually renewed. The lamp of life requires to be constantly fed, just as an ordinary lamp requires to be supplied with oil, but the combustion in the former case (that of the animal) is much slower than in the case of the latter.

Food is the fuel of the body; when it is not supplied the capillary fires consume the human frame itself, while substance enough remains to keep them burning, and when that fails they expire. Life goes also, and the man is said to be starved to death.

This is the reason that want of food causes shrinking of the body; it is an actual wasting in the fire. The fat of the body, which is the most combustible part, goes first, and afterwards the muscles. The animal heat expires, and death comes to close the sufferings of starvation.

The air, which acts so important a part in generating or causing animal heat, is composed principally of two gases, called oxygen and nitrogen, unequally mixed; it is composed of about one gallon of oxygen to four of nitrogen. It also contains small quantities of vapour of water, carbonic acid, and ammonia. The word "gas" means air, but the atmosphere is a compound of two gases, as we have said. The oxygen in the air sustains life by keeping up the animal heat, and giving vitality to the blood.

We *breathe it in* (*i.e.* inhale it), and it mingles with our blood in the lungs, which it turns to a bright red colour. Blood before the oxygen meets it is a dark purple.

This fact accounts for the pale cheeks and lips of people who breathe impure air, or air not quite fresh. Oxygen is the purest air ; if there is not enough in our share of the atmosphere, the blood cannot turn a beautiful red : therefore, dwellers in towns where the allowance of oxygen is small, are pale ; country folks who get plenty of oxygen are rosy and fresh-looking.

The reason why oxygen turns the purple blood red, is this :—The colouring matter of the blood is formed of very minute globules floating in it, the oxygen uniting with the coats of these globules makes them milky-looking, and the dark colouring matter seen through this milky tinge appears of a bright red.

Oxygen, as we have said before, causes combustion or heat by combining with the carbon which is the chief element in the blood, and thus sending warmth through all the capillary vessels. We swallow, of course, the mixture of nitrogen and oxygen of which the air is composed ; but after we have absorbed the oxygen into the blood in the lungs, we breathe back carbonic acid which mixes with the air.

Thus the air breathed in houses and rooms is rendered impure—that is, full of carbonic acid—and requires to be constantly renewed fresh from the outside air or atmosphere. The reason why the atmosphere or whole body of the air is not gradually rendered bad by human beings thus absorbing the oxygen, is because the under surface of vegetable leaves gives out oxygen as long as it is daylight, and thus preserves the due proportion of oxygen and nitrogen in the air.* But you will say, where do the plants get this oxygen ? Partly from the atmosphere, also from the earth which contains carbonic acid gas—that is, carbon and oxygen mixed—derived from the air through drops of rain. From the decay of vegetable and animal matter, and from the stones, which are full of carbonic acid in a solid state, the roots of trees and vegetables draw up, by capillary attraction,† this carbonic acid from the earth into their sap ; they keep for themselves (for the formation of wood) the carbon, and return the oxygen from the under surface of their leaves to the atmosphere.

Thus God has made animal life to depend on vegetable life ; for unless the plants returned to the air enough oxygen to supply the loss caused by our consumption of it, the atmosphere could not supply us with the breath of life.

But if we are so much indebted to the vegetable world, *it* also is de-

* The great currents of air circulating from the equator to the poles, and from the poles to the equator, also preserve the purity of the atmosphere, and keep up life by supplying the plants with carbonic acid borne from fully populated regions, and the populated regions with oxygen from the plants of little-inhabited lands. The fall of rain also washes impurities from the atmosphere.

† Capillary attraction is the power which very minute tubes possess of making a liquid rise in them above its own level. The smaller the tube the higher the liquid will be attracted up it.

pendent upon us. The plants, as we have said, require carbonic acid for *their* nourishment; now animals all exhale carbonic acid into the air, and thus supply the plants with it, in return for the oxygen which vegetation gives out. Thus all things are linked together in the golden chain of reciprocal benefits.

This carbonic acid gas is a foe to animal life if inhaled. It is the most deadly of poisons. It was the cause of the death of the British prisoners in the Black Hole of Calcutta; as choke-damp it causes death sometimes in mines or deep wells, and even if inhaled slightly in the impure air of a heated or crowded room or church, it is dangerous to health. It is a narcotic poison, and its presence may be divined by a sense of drowsiness and lassitude. We have said much about it already in our former passages on Ventilation.

No fire will live in an atmosphere of carbonic acid; therefore candles let down into wells and placed in suspected rooms, are sure tests of the air. Where a candle will not burn a man cannot live. Fire (*i.e.*, combustion) depends, you remember, on the union of carbon, or charcoal, and oxygen; if there is no oxygen there can be no fire.

You will perhaps wonder why there should be so much nitrogen (or bad air as we call it) mixed with the oxygen of the atmosphere. It is meant to *dilute* the oxygen, which has such great powers of combustion, that if it were not thus mixed, and weakened or diluted with nitrogen, it would quickly exhaust our lives by burning us up with animal heat.

We think these few hints will show the mother of a family the need of keeping the air of her house pure; and the benefit of "green leaves," which are not only ornamental, but useful in feeding the flame of life. Dear housemother, let your little ones, if you live in a town, have green plants and flowers in their nurseries, and walk in the parks near the life-feeding trees.

The necessity of being much in the open air will be made apparent by these facts.

"Recent researches, especially those of Professor Mantegazza, communicated during the year to the Institute of Lombardy, would seem to show that the ancients, after all, were by no means following merely imaginative or superstitious speculations in the practice they adopted of attempting, by the free use of odoriferous substances, to guard themselves against the attack of infectious diseases. This subject was deemed of sufficient importance to be referred to in the opening remarks of the presiding chairman of the public health section of the recent British Medical Association, as one deserving of careful study. Whether we shall, however, ever recur to the practice of Acron of Agrigentum, and other followers of Empedocles, the physicist, who not only used aromatic and balsamic herbs as preventives of pestilence, oftentimes planting them in abundance, for that purpose, round their cities, or adopt a similar course to that followed in a plague that once devastated Italy, when, acting on the advice of the faculty of the day, strangers crowding into Rome retreated to Lauretum, now San Lorenzo, that by a cooler atmosphere and by the odour of laurel they might escape the chance of infection, we cannot pretend to say. But it would really seem that we may, with increased confidence, rely upon our camphor bags, our lavender bundles, and the like, for Mantegazza says that in the oxidation of the essences of

odoriferous plants a large quantity of ozone* is evolved, at least as much as is generated by electricity or phosphorus ; the ozone being developed by the direct action of the sun's rays, and in some cases, whilst this commences in solar light, it continues in the dark. The plants which give ozone most readily are cherry-laurel, clove, and lavender, among herbs ; the narcissus, hyacinth, and mignonette, and amongst perfumes eau-de-Cologne, oil of bergamot, and certain aromatic tinctures. The cultivation of herbs and odorous flowers 'in marshy districts and in places infected with animal emanations,' is the advice which Mantegazza gives to those who pin any faith to his experiments. Verily, if Apollo the Healer, by his life-inspiring and health-restoring ways, can draw from the fairest flowers of nature so mysterious and yet so mighty a purifier, there is hope for the slums and pest-stricken nooks of our towns and cities, and so grateful and attractive a mode of disinfection will surely soon become universal."

We cannot leave the subject of air without pointing out the danger of a charcoal fire.—Charcoal is carbon ; when burning, it readily unites

---

* OZONE.—Although oxygen has never been changed from the gaseous state to a liquid or solid condition, it seems to be capable of assuming a peculiar condensed form called Ozone,—a word taken from the Greek ὀζω, to give out an odour.

MM. de Babo, Claus, and Soret all maintain that ozone is oxygen denser than common oxygen gas. The latter philosopher especially declared that ozone as a molecule consisted of three atoms of oxygen, and he therefore called it *binoxide of oxygen.* M. Soret, in continuation of his researches on the density of ozone, and employing the absorptive powers of essences of turpentine and cinnamon, has come to the conclusion that the density of ozone is 1½ times that of oxygen. Other learned chemists appear to concur in this opinion.

Ozone is produced in various ways.

1. By passing a series of electrical discharges—silent ones—through dry oxygen gas ; the latter diminishes in bulk to the extent of one-twelfth, showing condensation ; and if subsequently heated to a temperature of 550° F., recovers its former bulk and loses its peculiar ozone qualities. The reason the electrical discharge should be a silent one is because the electrical spark produces too much heat, which destroys a considerable portion of the ozone, and thus prevents any considerable accumulation.

2. This peculiar condition of oxygen is obtained by acting either on potassium permanganate, or upon baric dioxide with strong sulphuric acid.

3. A stick of phosphorus scraped clean under water, and then exposed in a bottle containing moist air, produces ozone.

4. When water is decomposed in the apparatus called a voltameter, the mixed gases give the peculiar odour, and are found to contain a certain quantity of ozone.

It is known that sea-air contains ozone, whilst the same air, having passed over or through a town, is supposed to be deprived in a great degree of this agent, which is considered to have purifying and health-giving powers. The absence of ozone from the air is said to be prejudicial to health, and during the prevalence of cholera it was thought to be due in some degree to the absence of this condition of oxygen.

Ozone was first discovered by Van Marum in 1785 ; but it was not till Schönbein experimented upon it, in 1840, that it received its name.

with the oxygen of the air and forms the deadly carbonic acid. If a charcoal fire be shut into a bedroom, it will deposit this poisonous gas at the bottom of the room, and as all gases diffuse themselves through each other—just as wine will through water—it will gradually permeate the air of the chamber, and a person sleeping in it for six hours would probably never wake again. He would be suffocated.

We must guard carefully in our houses against the presence of this insidious foe. As the breath of animals, and combustion of any kind create it, we should frequently renew the air, by letting the carbonic gas escape from our rooms and admitting the fresh out-door atmosphere. The decay of animal or vegetable matter causes it also. Our dust bins therefore require attention; the contents should not be let accumulate, or if they cannot be frequently cleared out, fresh slaked lime must be thrown into them, which will absorb the carbonic acid, and render it harmless.

As oxygen creates the animal heat which *is* life, but which also consumes the body, it follows that very pure air by increasing combustion will create appetite—hunger being the craving of the human frame for fuel to supply the hourly consumption. Therefore good air will give a good appetite. Exercise, also, increases animal heat, by causing man to consume more oxygen than when he is still and sedentary, for in exercise the respiration is quicker, and more air is inhaled. The heat in the capillary vessels is acted on by running, jumping, etc., as a fire is by a pair of bellows.

Hard work, reading aloud, singing—all increase combustion by introducing a larger amount of oxygen into the lungs, and cause the persons working, reading, or singing, to require food to sustain the waste of the frame.

In sleep we breathe more slowly than when awake, consequently we require no food during the hours of the night (if we slumber), for less oxygen is introduced into the lungs, and our food-fuel consumes slowly till we wake.

Want of exercise and over-feeding produce over-fat and ill-health, because more hydrogen and carbon are taken into the blood than can be consumed by respiration. These, therefore—remaining unburnt up—turn to superfluous fat, or cause disease.

In cold weather flesh-food and fatty matters are required, because they contain more carbon and hydrogen, which when burned in the blood produce a larger amount of heat than any other kind of food. Hence the inhabitants of the Arctic regions eat train oil, whale blubber, etc. And in winter it is well to supply a fuller meat and fattier diet than in summer heat. In cold weather more food is required, to keep up the animal heat, because the air contains more oxygen than in warm weather, and therefore burns up the food more fiercely; besides which we are generally more active and our faster respiration fans the heat in the blood and consumes the fuel faster.

In summer we naturally dislike animal food, because the carbon and hydrogen in it make us too hot;—we prefer fruit and vegetables, for they contain less carbon and hydrogen than meat, and also a very large amount of water, and therefore produce less blood, and are not of so combustible a nature. On this account the natives of tropical climates, by a wise instinct, live on rice and fruit or vegetables.

The frequent use of baths tends to improve health and appetite in consequence of their freeing the pores of the body from obstruction, and thus promoting combustion. Ventilation, also, increases combustion by means of the introduction of more oxygen to the house. Therefore the badly-fed poor are instinctively averse to washing and to pure air, both of which increase hunger by diminishing warmth.

The cold-blooded animals—frogs, fishes, snails, lizards, etc.—have cold blood because they consume very little air ; without a plentiful inhaling of which combustion is slow and animal heat small.

But while carbonic acid, when inhaled, is so injurious, it is, in creation, an agent of great good. In water it is beneficial to us ; vegetation would perish without it, and chalk could not be formed without carbonic acid. There is nothing in nature which does not in some way tend to good.

"When we consume wood and coal in our fires, or bread and wine in our bodies," says Dr. Odling, "we merely effect a combination whereby their potential is converted into actual energy ; this potential energy* having been stored up in them at the period of their formation, this energy being, in fact, the robbing of the sun's rays, and the storing up the heat of these rays in these articles of fire fuel. Under the action of the sun's rays the decomposition is effected of the carbonic acid and water into oxygen gas restored to the atmosphere, and of carbon-hydrogen, which is accumulated in the vegetable tissue. When we burn these tissues in our fires or bodies, we are simply restoring, in the form of actual energy, the potential heat of the sun's rays or its mechanical equivalent. We have all read of the Bourgeois Gentilhomme who had been talking prose all his life without knowing it. We have all our lives, and some of us without knowing it, been realizing that celebrated problem of extracting sunbeams from cucumbers."

This mighty agent of Life possesses also tremendous power in other respects. In can overcome the power of cohesion—that is, the attraction which by drawing particles of matter together makes bodies solid. Heat will rend these atoms asunder and change solids into liquids, liquids into vapour, and expand even the air itself, and the fine gases to a marvellous extent. We are all aware how heat expands our bodies in hot summer weather ; how furniture expands in the day, and contracting at night by the colder atmosphere, makes night hideous to a wakeful person by divers mysterious cracks and sounds which have no apparent cause. It is the expansion of heat which bursts a roasting chestnut if an opening has not been made in the skin or shell, and which causes breakages of glass and china from hot water being poured into them.

Liquids expand still more readily with heat—some fluids expand more than others.

THE THERMOMETER.

The expansion of liquids by heat has been used in the formation of the Thermometer, or heat *(thermo)* measure *(meter).*

Quicksilver, though a solid metal at the North Pole, is a liquid, and can be poured out like water in our climate. It is nearly fourteen times as heavy as water.

* Potential energy used to be called "latent heat."

It is used for thermometers instead of spirits of wine, because it bears a greater degree of heat before it boils. The instrument is made in the following manner :—

A glass tube with a small bore, sufficiently so to be capillary, is selected with care, in order to secure the same diameter throughout. The bores of some tubes are like an elongated cone, and, if they were used, the mercury would expand much more in some parts of the tube than in others, and hence the indications of such a thermometer would be incorrect. A little mercury, amounting to an inch in length, is allowed to enter the tube, and being moved from one end of the tube to the other, it is soon discovered whether the mercury increases or decreases in length, or remains, as is usually the case, of the same linear dimensions in all parts. The proper length having been cut off, one end is melted and blown out into a bulb, the other being formed into a cup or funnel-shaped form, to hold the mercury, which is forced in; the tube is now inclined slightly, and the air in the bulb expanded by heat; it is afterwards allowed to cool, and, as the air cools and contracts, the mercury from the upper funnel is forced in by the pressure of the air, and enters to supply the place of the air driven out by expansion. To get rid of the rest of the air, the mercury is alternately boiled and cooled until the bulb and part of the tube are full of mercury.

Having thus filled the bulb and one-third of the tube, the next step is to seal it hermetically, which is done by heating the mercury to the boiling-point, and at the moment the mercury is overflowing at the summit the glass is fused with a flame, urged by a blow-pipe before the mercury has had time to contract; and if this operation has been skilfully performed, a perfectly void space or vacuum, free from air, is obtained as the mercury sinks or contracts in the bulb and tube.

The marks on the thermometer are made by means of melting ice and boiling water. Ice always *melts* at the same temperature, and pure water invariably *boils* at the same temperature, when the barometer stands at 29·8 in.

It is only necessary to immerse the thermometer alternately in melting ice and in boiling water, with certain precautions, and to mark the point at which the mercurial column stands—one being called the freezing-point, and the other the boiling-point.

The instrument must be immersed in the melting ice until the mercury becomes perfectly stationary. The immersion in boiling water requires the greatest care, and a time should be selected when the barometer stands at 29·8 or 30 inches. The depth of the water in the vessel should not exceed two inches. The vessel must not be a shallow one, but sufficiently deep to contain the bulb and nearly all that part of the tube up which the mercury will rise. When placed in boiling water, distilled water should be

used, and brisk ebullition maintained, and the steam allowed to escape freely, as the confinement of it would raise the temperature above that of boiling water.

The place at which the scale is marked 32°, is called freezing-point. The boiling-point is marked 212°.

F. signifies Fahrenheit's, or the English scale.
C. signifies the Centigrade, or French scale.

212°. Water boils.

190°. Brandy boils.

174°. Spirits of Wine boil.

127°. Tallow melts.

110°. Summer in *East Indies*.

80°. { Very hot in *England*.
{ Common heat in *East Indies*.

75°. Summer heat in *England*.

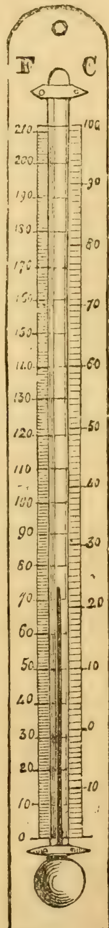
55°. Temperate in *England*.
50°. Common heat of spring-water.
43°. Olive oil begins to stiffen.

32°. Water freezes.

20°. Very cold in *England*.

5°. Winter in *Canada*.

In *Iceland*, the cold is sometimes 24° below 0.
At 40° below 0, quicksilver freezes.



In England the interval, according to Fahrenheit, is divided into 180 parts, the zero being 32° below the freezing-point. On the Continent, the interval is divided by Celsius, into 100 parts, and is called the Centigrade

F

scale,—the zero commences with the freezing-point; sometimes into 80 parts, called Réaumur's scale, the zero, as before, being the freezing-point of water. Of the three, that of Celsius is the most simple, and will be gradually adopted throughout the civilized world. Fahrenheit's scale expresses *slight* variations of temperature better, therefore it is preferable; the degrees on the "Centigrade" being too large to express minute differences.

COMMUNICATION OF HEAT.

Heat is communicated from one body to another by Conduction, Absorption, Reflection, Radiation, and Convection.

CONDUCTION means the communication of heat from one body to another by contact. Some bodies conduct heat well; others are bad conductors. The best are the metals—lead being inferior to the rest. Light and porous bodies are bad conductors of heat, as hair, fur, wool, eider-down, cotton, wood, air, water, and snow. Our readers will see in these facts the scientific reason for many of our ordinary practices. Everything which conducts heat *from us*, must necessarily render us colder; bad conductors on the contrary keep us warm, because they do not rob us of our warmth to transfer it to other objects. Therefore, in winter, when we desire to keep as much heat to ourselves as we can, we dress in woollens and furs, because wool and fur are bad conductors, and will not suffer the warmth of our body to be drawn off by the cold air. Wool and fur do not *give out* warmth to us from themselves, they simply preserve our own natural heat from escaping into the air, which would otherwise gradually draw it away from us till both it and our body were of the same temperature. For this reason GOD has clothed his dumb creatures with hair and wool, down and feathers, which, being bad conductors, serve to keep them warm. Fur, hair, and feathers are bad conductors of heat because the air (which is happily also a very bad conductor) gets amongst their fibres, and thus in a manner defends the creatures covered by them from itself. It may be asked, why, if the air be a bad conductor of heat, it should deprive any part of our bodies exposed to it of warmth, and make us require clothing? The reason is that the air is ever moving and changing; the particles which pass over our skin deprive us of but a small amount of heat at a time, but they move off, and fresh cold ones instantly supply their place, and thus we are continually warming fresh particles of air, to our own loss of temperature.

The act of warming particles of air by conveying to them our own heat, and thus growing colder ourselves, is the reason why a fan or punkah is a relief in warm weather. By agitating the air, we constantly bring fresh cold particles to be warmed by us, and thus bestow on them our superfluous warmth and become ourselves cooler.

We said just now that happily air is a bad conductor of heat. If it were as good a conductor as metal, it would draw the heat from our body so quickly, that we should die of cold. Hot air too would parch and burn us up if it conducted heat as metal does, but fortunately it conveys heat to us as slowly as it takes it away.

The earth is also a bad conductor of heat; the surface may be scorched, but intense heat cannot reach the roots of the trees, neither

can cold, in the shape of frost, penetrate more than a few inches beneath the surface. Creative wisdom is shown in this, for if the earth were a good conductor, vegetation would perish; springs of water would be dried up in summer by heat, and in winter frozen hard.

The kettle-holder made of wool, the pieces of ivory which break the metallic communication between the good-conducting silver teapot and its handle, and the soot—charcoal—covering the bottom of a kettle, which allows the vessel to be taken direct from the fire and held, though full of boiling water, are good and familiar examples of the application of bad conductors.

Snow is a very bad conductor. Its protecting veil consequently defends vegetation from cold and frost, by keeping in the warmth of the earth.

The earth also is a bad conductor; for this reason, the water of a spring is cool in the hottest weather.

The reason that the earth is a bad conductor is that its particles are not continuous. Heat is conducted best by continuity of matter.

Linen is a *good* conductor of heat; it therefore draws the animal warmth off rapidly, and produces a sensation of chill. Cotton is warmer wear, because it is not so good a conductor as linen. Silk is warm wear also, because it is a bad conductor; raw silk, a very bad conductor, is even a warmer clothing than wool.

The metals are excellent conductors of heat. The iron of stoves conducts the heat of the fire to the air, and thus warms a room. Our readers are, doubtless, aware how hot the handle of a metal teapot will become from the same reason.

The ABSORPTION of heat means the sucking in instead of diffusing it. Every good conductor of heat is therefore a bad absorber of it.

The power of absorbing heat depends on the nature of the surface of a body; bright and polished surfaces will not absorb heat as well as black or rough ones do. This is the reason why a kettle, the bottom and back of which are covered with soot, boils much quicker than a bright new one would—for polished metal reflects heat instead of absorbing it; and on this account brilliant tin reflectors, such as plate-warmers, or meat-screens, are used.

"The absorptive power," says Professor Pepper, "was supposed to depend greatly upon the particular colour used. Franklin placed pieces of coloured cloth in the sun's rays on the snow, and found they sank into the snow or melted it in the following order—black, blue, green, purple, red, yellow, white. Tyndall, however, has explained the cause more correctly, and has discovered that the colour has not so much to do with the effect produced as the nature of the material used for the colouring agent. Although it has been stated by Leslie that white surfaces generally reflect heat well, and absorb it indifferently, there is the curious fact, ascertained by Melloni, that white lead has quite as great an absorbent power as lampblack; and if the heat comes from boiling water it will absorb twice as much as it would do if it came from an incandescent platinum wire."

Nevertheless colours undoubtedly do affect the heat or coolness of our dress. We think everybody will allow that a black dress in summer is much warmer than a white one, irrespective of its effect on the sight, to which colours appear certainly either warm or cool. Every one is sensible of the heat and glare of scarlet, and of the coolness of green and blue to his eye in the furniture of rooms or in dress.

Professor Pepper adds, "Leslie's principle does apply to clothing, and it appears that if we imitate nature, and, like the Polar bear, wear white, we shall be warmer in winter and cooler in summer."

The power of black to absorb heat was tested by a friend of our own, in his fruit garden. He had the wall behind an apricot tree painted black for one half of the tree, leaving the other side of unpainted bricks. The apricots on the black side were ripe before the others.

REFLECTION of heat is heat thrown back from polished and bright surfaces; as from a meat-screen; but if the screen be scratched, painted, or dull, it will not reflect or cast back the heat it receives from the fire. Polished boots are cooler than dusty ones from the same cause; a dusty boot absorbs heat.

Polished metals will conduct heat by contact. If a bright steel poker be kept in a hot fire, it will conduct heat; if it were lying in the fender, it would reflect it.

Heat is RADIATED from one body to another when a non-conducting medium separates them. A fire radiates heat, the burning fuel emitting rays which warm us when near them. Dull and dark substances are radiators: light and polished substances radiate badly; therefore stoves are cleaned with blacklead, which radiates heat better than any other known object.

Bodies which are bad radiators preserve the heat within them. Polished metal is a bad radiator, therefore teapots are made of it, because as it does not radiate well, it keeps the heat of the tea in. Polished metal also keeps cold in it. Hot water will keep hot longest in a metal jug, and cold water (in hot weather) will keep cold longer in one. This fact accounts for the use of tin cans and jugs for bringing hot water to bedrooms. Very brightly polished dish-covers being bad radiators, do not suffer the heat of dishes to escape by radiation, but as polish is essential for non-radiation, the same covers if suffered to become dull, scratched, or dirty, will only badly fulfil the purpose for which they are designed.

CONVECTION of heat, means heat communicated by being carried to another thing, or place. Water is made hot by convection.

Air also (being like water, a bad conductor) is heated by convection.

Water and air both ascend when heated. The water at the bottom of a pot or boiler, and the air nearest to the fire, will both become hot first and then rise. The colder water or air above then descends, but when heated ascends in its turn; thus the whole air in a room, or the whole body of water in a vessel is gradually heated by convection.

The general atmosphere is also heated by convection. The sun (which does *not* heat the air) heats the earth; the earth heats the air resting on it. This heated air, called "a convective current," rises, and carries heat with it. Colder air takes its place, and is warmed and ascends in its turn.

FIRE—our best servant and worst enemy, as the old proverb calls it, is heat and light produced by combustion of inflammable substances, which separate from each other by chemical action, and combine with the oxygen in the air.

Fuel contains carbon, hydrogen and oxygen, with certain mineral substances. Carbon is the solid part of fuel—charcoal is carbon, so are lampblack, coke, and diamonds! Hydrogen is an inflammable gas; carburetted hydrogen is burned in the lamps in our streets and houses as

common gas. It is the lightest substance known; it burns the moment it is ignited, and will, if a light reaches it, explode should there not be enough atmospheric air in the room to render it innocuous. Happily its unpleasant odour is a warning of its presence, which should never be unheeded.

Oxygen is the pure air which gives life. Nitrogen is an invisible gas which will not burn, will not help combustion, and is as deadly as carbonic acid gas. Now three of these elements are employed in making every common fire—*i.e.*, hydrogen gas, carbon, and oxygen; the two former in the fuel, the latter in the air.

The hydrogen is set free by the match, and uniting with the oxygen of the air makes a flame, the flame heats the carbon of the fuel, which also unites with the oxygen and produces carbonic acid gas.

Fire gives forth warmth by liberating latent heat from the air and the fuel. Carbon requires a great deal of heat to make it unite with the oxygen of the air, in consequence of which the fire kindles gradually. A blazing fire burns the fuel quickest, because the inflammable gases then escaping help combustion. A clear, bright fire is more economical, for it burns more slowly, and there is very little smoke with a red hot fire, much less than with one partially black, because the entire surface of the coals being in a state of combustion, very little of the escaping carbon remains unconsumed to fly off as soot. Smoke is unconsumed matters separated from the fuel, consisting of minute pieces of carbon, gaseous exhalations, and vapour. It is, we know, possible to consume smoke.

Fresh coals increase smoke, because more carbon and volatile particles are separated from the fuel than can be reduced by combustion, and consequently they fly off in smoke.

The combustion of a fire is very unequal, because the air reaches it in varied currents. The various shades of red, yellow, and white heat, showing the different degrees of combustion, mingled with the unburnt coal, produce the fanciful resemblances we call "faces in the fire."

Coals burn out faster on a frosty day than on a warm one, because the cold condenses the air and thus produces more oxygen; colder air makes the fire burn more intensely.

Our readers are probably well aware that the rays of the sun falling on a fire will often put it out. The reason is, that the solar rays are composed of three parts—lighting, heating, and actinic or chemical rays. The two latter interfere with combustion.

Fires "go out" in summer, not only because less attention is paid to them, but because the hot and rarefied air of summer has its oxygen diffused through a greater space. On damp days, also, fires do not burn well because the air is full of vapour and is too much rarefied. In windy weather, when the air is rapidly changed, plenty of oxygen is supplied, and the fire will burn fiercely. For the same reason, a pair of bellows helps to kindle, or get a fire up, by driving the oxygen rapidly into it.

When coals are small and dusty it is well to sprinkle them with water, this cakes them and the steam generated assists to heat them into combustion; a little water, in fact, makes a fire burn more fiercely, because it is readily converted into steam, which increases heat. A large quantity of water extinguishes fire because it cannot be converted instantly into steam.

From these facts we may learn an important lesson. In cases of fire, a little water employed to extinguish it is worse than no water at all, as it

increases the intensity of the fire instead of quenching it; a supply, rapid and abundant, which cannot be converted into steam, is required.

Smoke ascends the chimney, unless for our misery the flue smokes; it is carried up by the air, which, passing over the fire gets heated, becomes of course lighter, and flies up the chimney carrying the unconsumed particles of carbon with it; for, as we have said, warm air, expanded (as all things are) by heat, always ascends, the cold and heavier air sinks. This cold air presses the lighter (heated) air up the chimney.

We come now to the vexed question of smoky chimneys. There are, of course, scientific reasons for them. If fresh air is not let into the room as fast as it is consumed by the fire, a current of air comes down the chimney to supply the deficiency, and drives the smoke before it. This is one cause.

Again, if the funnel of the chimney—that is, the part up which the smoke goes—be very short, it will smoke, *because* the draught of a short flue is too slack to carry the smoke up the chimney. The longer the flue, the greater the draught; hence the use of chimney-pots,

Houses in valleys often smoke, because the wind striking against the hills, returns to the chimney and destroys its draught.

If the fireplace and the door are on the same side of the room, the chimney will be apt to smoke, because the current of air from the door will blow obliquely to the fireplace and drive the smoke into the room. It is best, if possible, for the room door to be opposite to the fireplace. Too large an opening of the fireplace, as in farm-houses and kitchens, will also cause smoke, because much of the air which goes up the chimney has never been over the fire, and this cold air chills the ascending hot air and checks its ascent. Contracting the space, or fixing a blower is the best remedy: a blower increases the draught by compelling the air to pass through the fire, and thus makes it so much hotter that it ascends more rapidly.

Such are some of the causes of smoky chimneys; we may add obstructions by soot, bricks out of the chimney and chinks which admit cold air; in short the management of the draught is the great thing in almost every case. Air *must* be supplied to the fire, and all contrivances to keep it out of the room, such as list or Indian-rubber round doors, sandbags, etc., are likely to make a chimney smoke. The draught of air from the door or window always sets towards the fireplace; a bed, chair, or sofa placed between them would be in a draught.

Cure for Smoky Chimneys.—Inflate a large ox-bladder with air, and tie it by the neck to the middle of a stick, which place across the inside of a chimney, about two feet from the top, or at the foot of the chimney-top. The buoyancy of the air keeps the bladder continually in a circular motion, and thereby prevents the rush of air into the funnel from descending so low as the fireplace.

The grate should be fixed near the floor of the room, as the heat of the fire has very little effect on the air below the level of the grate. A poker laid across a dull fire will revive it, because the metal concentrates the heat and throws it on the fire, and air being drawn between the poker and the coals a slight draught is created.

In every occupied room there are two currents of air—one of hot air flowing out of the room, the other of cold air flowing into the room. The

hot air escapes by the crevice at the top of the door, the cold air enters at the bottom.* But this is not the case when a fire is lighted in the room; an *inward* current is then drawn through all the crevices, and the heated air escapes up the chimney.

Professor Faraday has well explained the advantages of the open coal fire and chimney in comparison with the stove and flue. A parlour grate will consume forty pounds of coal in twelve hours; the combustion of this quantity of fuel renders 42,000 gallons of air unfit to breathe. But the chimney clears us of all this bad air which ascends it, while *five times* that quantity of air is carried up with it by the draught, and thus good ventilation is obtained by means of our ordinary fires.

If the combustion of the coals were perfect, we should have neither soot nor smoke. Dr. Arnott's patent stove was constructed that the combustion might be perfect. In a common fire it is estimated that five-sixths of the heat passes up the chimney.

The principle of the Arnott stove may be carried out by lighting a fire from the top. Here are instructions given for the arranging it, taken from the *Builder*:—

"Clean out your grate; cover the bottom with a sheet of paper cut out or folded to fit; place coals in the grate to the level of the top bar, keeping the larger ones to the front, to prevent waste. Light your fire on the top and allow it to burn downwards undisturbed. An ordinary fire prepared and lighted in this way will, according to the size and form of the grate, burn six, eight, or ten hours without any renewal of coal, burning brighter and warmer than if lighted from below, as fires are ordinarily made. The coal should be tolerably equal in size, something like McAdam stone; place the large to the front, the small to the back. The paper is put in the grate to prevent any air rising through the bottom bars. The fire is lighted on the top† and made to burn downwards to prevent rapid combustion, and to keep the heat on the surface of the coals, cinders, or coke; and if undisturbed, the combustion will be so complete that there will be no waste ashes. The grate must be cleaned each morning, and the paper must be renewed on the bottom of the grate when the fire reaches the lower layer of coal."

This fire is very advisable for a chimney which is incurably smoky; but though economical and clean, it lacks the bright sparkle and blaze of the old-fashioned fire.

A very good plan also, is to make a hollow at the back of the fire, before fresh coals are put on, and fill it in first with the cinders under the grate. Place the fresh coals on these cinders, and the gas given out by the coals will be consumed by them, and the smoke also. This is a very old-fashioned mode of making up a fire; the reason why it answered well was probably unknown to the housewives of other days, but their practical knowledge told them that this was the right way.

It should ever be borne in mind that fire cannot exist without air, and will not spread rapidly unless it is plentifully supplied with it. Therefore in cases of fire catching the furniture, etc., in a room, close all the doors and

* This is the cause of our feet being cold if the draught is strong.

† With wood and paper, as for other fires.

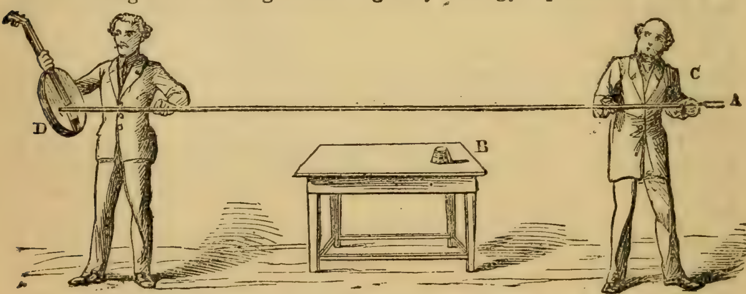
windows instantly, while every effort is made to extinguish it. In case of the dress catching fire, the same truth should be borne in mind. Never run out into the air. Running increases the flame by fanning it. Lie down and roll over and over on the ground, if you are alone; at all events *lie down*, as *flame ascends*, and will therefore not be so likely to injure the head or vital parts if the person on fire is lying down. But if possible roll yourself in a blanket, or the rug, or a table cover at once. The moment all air is shut off from fire it will go out. Remember also, that as heated air and vapour ascend, and cold air sinks, you will always (in the midst of most suffocating smoke) find air fit to breathe within a foot of the floor; CRAWL therefore rather than walk in escaping from a room full of smoke; a piece of flannel over the mouth would also enable you to breathe.

LIGHT.

LIGHT is supposed to be communicated and produced by the vibratory motion of a subtle and delicate ether, but it is believed that further discoveries may be made on the subject hereafter.

"Starting with the proposition," says Professor Pepper, "that all sources of light and luminous bodies, like musical instruments, must first vibrate, it is not difficult to understand by analogy, how these vibrations may travel at the rate of 182,000 miles per second, in straight lines called rays.

"A tuning-fork emitting sound might by analogy represent a source of

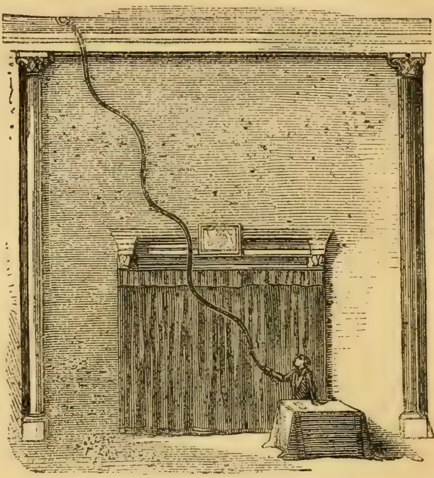


A, tuning-fork struck on the leaden cone B, capped with leather, and applied to the end of the rod C, whilst the other end is held against the sounding-board D.

light like the sun, whilst a long rod communicating with it would stand in the place of the theoretical ether, propagating the undulations from the sun through a space of 92½ millions of miles, and if the other end of the rod communicates with the sounding-board of a guitar, the audible sound obtained might compare with the light falling on the earth, and becoming apparent by radiation.

"The conversion of a continued series of mechanical impulses into waves is beautifully shown by taking hold of the end of a long vulcanized india-rubber tube filled with sand, and having attached one end to the ceiling or other convenient place, it is easy by a jerk to produce the appearance of a

wave, which travels distinctly from the hand to the ceiling; at the same time it demonstrates the progressive nature of the wave or undulation, and as the portion held by the operator cannot move from his hand to the ceiling, it shows how the eye is deceived whilst looking at the motion of waves of water. Every wave in water is propagated by the rising and falling of that which has preceded it, and not because the volume of water representing the wave travels bodily from the spot where it is first noticed to the shore where it breaks.



The Vulcanized Tube attached to the ceiling, and thrown into protuberances or waves by the hand of the operator.

"Dr. Tyndall has shown, by a modification of Dr. Young's experiments with vibrating strings upon which light is thrown, a number of very beautiful effects. A silvered cord attached to the iron arm of a curved spring band, one end of which is made to vibrate by an electro-magnet, displays the divisions of the cords into wave-like figures most perfectly when the cord is illuminated by the lime or, better still, the electric light.

"Using the brilliant light as before, a still more perfect and admirable experiment may be conducted by attaching one end of a bright silvered chain to a hook screwed into a vertical whirling table, and the other to a proper stand. The chain being horizontal and the wheel vertical, it may be swung into one long wave, or by a still more rapid rotation, can be divided into three, four, or more. The links of the chain flash in the light, and produce the most pleasing effects.

"It must be remembered that if cords, chains, water, air, &c., can assume a wave-like motion, the wonderful tension and elasticity of the hypothetical ether would permit the latter to adapt itself to the most complicated movements almost with the rapidity of thought. The very spiral, spindle-like, or corkscrew motion observable in the chain and cord affords a good idea of the mechanism of the propagation of light, as the movement of each molecule of ether is always perpendicular to the path of the ray or wave of light.

"The astonishing rapidity of the periodic movements of the non-gravitating molecules of ether becomes apparent, when it is stated that to produce white light five hundred millions of millions of vibrations of the ether, $1{,}000{,}000{,}000{,}000 \times 500$ must occur in every second of time.

"Or, taking the coloured rays at the extremities of the solar spectrum, viz., the red ray and the violet, the former demands the recurrence of four

hundred and fifty-eight millions of millions, 1,000,000,000,000 × 458 ; and the latter, the violet, a still larger number, and greater rapidity of vibration, six hundred and ninety-nine millions of millions, 1,000,000,000,000 × 699 per second.

"The coloured rays of light are supposed, according to the undulatory theory, to be distinguished from each other by the breadths of the different waves, just as the sound of a stringed instrument may vary according to the diameter and thickness of the strings. A tightly-stretched thin cord vibrating would be the parallel to violet light. It is an axiom that, "*The rapidity of vibration is inversely proportional to the length and diameter of the string, and proportional to the square root of the tension.* A thicker cord not so tightly stretched, would be the parallel to red light.

Heat a Source of Light.

"When iron is heated to a temperature of 635° Fahrenheit, it emits a dull red light, visible only in a darkened room. If the heat is further increased to 903° Fahrenheit, a bright red light is apparent, visible in a chamber fairly illuminated. The light attains a greater intensity at the moment the iron is heated to 1000° Fahrenheit. Thus, by the progressive increase of the heat of the iron, what is call a dull red, a pale red, and a white heat is obtained. By increasing the heat of a solid body a development of light or incandescence is obtainable.

Light the frequent attendant of Electrical Phenomena.

"The intense and dazzling brightness of lightning has been known to cause temporary and permanent blindness. The immense electric spark, the result of the discharge of thousands of acres of charged clouds, will probably be more closely imitated than ever by an enormous induction coil, now being constructed by Mr. Apps for the Royal Polytechnic, which is calculated to give a spark 5 ft. in length, the usual length being from 5 to 18 in., or, in very rare cases, 2 ft. At the moment of discharge the electricity may develop light, heat, magnetical, mechanical, and chemical effects. Here is a correlation of forces that might well excuse Oersted in proposing a theory of light in which he regards light as the result of electric sparks."

Light moves with extraordinary swiftness. It travels at the rate of 182,000 miles in a second, and will go eight times round the earth while a person could count "one." It acts on the nerve of the eye and causes us to see. The pupil *contracts* when the light falls on it full and brilliantly, as from the sun, etc., and dilates when the rays of light are few. The sudden light is therefore painful because it falls on a dilated pupil, which has not had time to contract. By dilating and contracting to catch more or keep back the rays, the pupil of the eye accommodates itself to light or darkness.

The broad pupil of a cat's eye is fatigued by light, therefore she closes her eyes, blinks at fire-light, and sleeps much by day ;—seeing best in the dark, because she has the power, as tigers and owls also have, of dilating the pupil of the eye to collect scattered rays in a manner impossible to us,

THE HUMAN EYE.

From Professor Pepper's "Cyclopædic Science Simplified."

"This elaborate and wonderful work of the Creator, built up of the usual constituents of animal substances, viz.—albumen, gelatine, fibrine, with a little fatty matter—all marvellously shaped and fitted to their purposes, represents an optical instrument which transcends every contrivance made by the hand of man. The camera obscura is the nearest approach to an imitation of the eye. It is fitted with a double-convex lens; the rays of light thrown off from any object placed before the apparatus are brought to a focus, and received upon a sheet of paper or piece of ground glass. In the eye the same result is brought about by the refraction of light in the crystalline lens and the other humours; the rays are brought to a focus, and impinge upon a nerve, spread out as a delicate network to catch the beams, and to vibrate in sympathy with those exquisite undulations which cause the propagation of light, and thus to produce the sensation of vision. Anatomists have given this organ their most careful attention, and published elaborate drawing of the various parts of the eye. By the permission of Messrs. Chadburn, of Sheffield, a copy of their instructive diagrams of the eye is added.

A. The Pupil, or circular opening in the iris, capable of being contracted or enlarged, according to the amount and intensity of light.

B. The Iris, a flat circular membrane, of a grey, blue, or black colour, forming the anterior and posterior chambers of the eye. It performs the same functions as a diaphragm in an optical instrument.

C. The Sclerotic Coat, a tough white membrane, to which the muscles for moving the eyeball are attached.

D. The Eyelids, containing the tarsal fibro-cartilages.

E. The Cornea, composed of tough transparent laminæ, forming the front of the eye; the first surface, where the rays of light are refracted. Some anatomists have considered the sclerotica and cornea as one and the same, and have termed the cornea the transparent, and the sclerotica the opaque cornea.

F. The Aqueous Humour, contained in a delicate membrane filling the space from the cornea to the crystalline lens. The space occupied by this humour is divided into two parts by the iris, forming, as shown at B, the anterior and posterior chambers of the eye.

G. The Crystalline Lens, contained in a transparent membrane called the Capsule, the principal refracting medium of the eye. The capsule adheres by its edge to the ring-shaped body called the Ciliary Circle or ligament, N.

H. The Vitreous Humour, contained in the hyaloid membrane—a jelly-like substance, resembling the white of an egg, filling the body of the eye.

I. The Retina, a membrane which receives the impression of light, and transmits it to the brain through the optic nerve, K.

J. The Choroid Coat, a delicate membrane lining the sclerotica, covered on its inner surface with a black substance (*pigmentum nigrum*, resembling the colouring matter of the negro's skin) contiguous to the

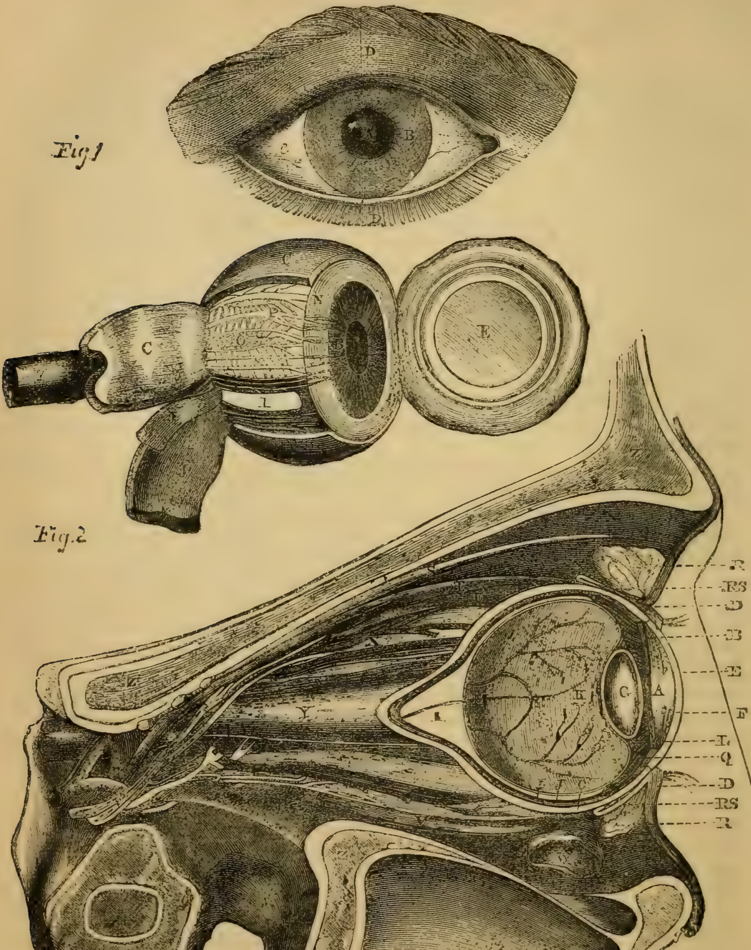


FIG. 1. The Human Eye. FIG. 2. The Eyeball, showing the Coats, etc., of the Eye. FIG. 3. Longitudinal Section of the Eye and Orbit through the dotted lines on Fig. 1.

retina. The choroid, by its vascular tissue, serves to carry the blood into the interior of the eye.

K. The Optic Nerve.
L. Canal of Petit.
M. Central Artery of the optic nerve.
N. Ciliary Circle or ligament.
O. Ciliary Nerves.
P. *Vasa Vorticosa.*
Q. The Ciliary processes.
R. *Tunica Conjunctiva.*
R S. *Tunica Conjunctiva* collapsed, as when the eye is closed.
S. Elastic Muscle of the Eyelid.
T. Elastic Muscle of the Eye.
U. Superior Oblique Muscle.
V. Depressive Muscle of the Eye.
W. Section of Oblique inferior Muscle.
X. Nerves and Arteries.
Y. Tube conveying the optic nerve to the brain.
Z. Bone forming the socket of the eye.

N.B.—The same letters apply to each figure.

"Brewster found the following to be the refractive powers of the different humours of the eye, the ray of light being incident upon them from air :—

Aqueous humour	1·336	Crystalline lens, mean . .	1·3839
Crystalline lens, surface .	1·3767	Vitreous humour	1·3394
„ „ centre .	1·3990	Water	1·3358

"But the rays of light are not all incident upon them from the air, and as the rays refracted by the aqueous humour pass into the crystalline, and those from the crystalline into the vitreous humour, the indices of refraction of the separating surfaces of their humours will be—

From aqueous humour to outer coat of the crystalline . .	1·0455
From „ „ to crystalline, using the mean index	1·0352
From vitreous to crystalline, outer coat	1·0443
From „ „ „ using the mean index . . .	1·0332

"The eye, as already described, consists of four coats or membranes, which are disposed in the following order—viz., 1st, the sclerotic ; 2nd the cornea, which fits into it like the glass of a watch ; 3rd, the choroid ; and 4th, the retina : of two fluids or humours, the aqueous and the vitreous, and of a lens called the crystalline.

"Over the cornea and sclerotic is expanded a delicate mucous membrane, called the conjunctiva. The iris is suspended across the eye, and in its centre is an opening, termed the pupil, which immediately opens when the light diminishes, and closes if the light is too strong. The posterior convexity of the lens is greater than the anterior. Sometimes, from a too great convexity of the lens or the cornea, the rays of light which enter the eye come to a focus before they impinge upon the retina, producing the defect called short-sighted vision. Optical science corrects this inconvenience by the use of a concave lens. If the crystalline lens is not sufficiently convex, the rays of light come to a focus behind the retina ;

this defect is surmounted by the use of a convex lens, which diminishes the divergence of the rays. Such ingenious artificial additions to the eye are common enough at the present day, but it may be asked, how did our forefathers bear these infirmities? Spectacles are supposed to have been unknown to the ancients, and it is stated by Francesco Redi that they were invented in the 13th century, between the years 1280 and 1311, probably about the year 1299 or 1300; he gave the honour of the discovery to Alexander de Spina, a monk of the order of Predicants of St. Catharine, at Pisa. Muschenbroek, the old electrician who discovered the Leyden jar, observes that it is inscribed on the tomb of Salvinus Armatus, a nobleman of Florence, who died in 1317, that he was the inventor of spectacles. This may have been the person who had the secret as well as the learned monk, because Redi states that the latter only disclosed the secret upon learning that another person had it as well as himself.

"Mr. Acland makes the following practical and valuable observations on defects of vision:—

'*On the Symptoms indicating a Necessity for Spectacles.*

"'The natural decay of vision occurs usually from thirty to fifty years of age, varying according to habits and employment of the individual. Some time during this interval the refractive power of the crystalline humours of the eye slightly alters its condition, whilst the crystalline lens and cornea change their form, so that a difficulty of distinct vision is felt. The eye loses a portion of its power of seeing at varying distances, or its power of adjustment; and near objects are no longer as easily seen as in youth. Reading small print by candlelight is difficult, as the book requires to be held at a greater distance from the eye than formerly, and a more powerful light is needed; and even then the letters appear misty, and to run one into the other, or seem double. And still further, in order to see more easily, the light is often placed between the book and the eye, and fatigue is soon felt, even with moderate reading.

"'When these symptoms show the eye to have altered its primitive form, spectacles are absolutely needed. Nature is calling for aid, and must have assistance, and if such is longer withheld, the eye is needlessly taxed, and the change, which at first was slight, proceeds more rapidly, until a permanent injury is produced.

"'There is a common notion that the use of spectacles should be put off as long as possible, but such is a great mistake, leading often to impaired vision for life, and is even more injurious than a too early employment.

"'Timely assistance relieves the eye, and diminishes the tendency to flattening, whereas should the use of spectacles be longer postponed, the eye changes rapidly, and when the optician is at last consulted, it is found that a deeper focus spectacle must be used than usual for the first pair, and even these suit but a short time and have to be again exchanged for those of still deeper power; and these frequent changes become a matter of necessity which, unless judiciously checked, continue during life.

"'It must not be forgotten that, when first using spectacles, they are not required during daylight, but only for reading, etc., by artificial light, and it may be from six months to two years from the time of first adopting them ere they will be required for day use.

" '*Spectacles for the Short-sighted.*—Short sight is often present at birth, but is little noticed, nor its inconveniences felt, until study becomes imperative. When this occurs, the power employed should be always slightly under that needed to remedy the defect, otherwise the eye will gradually accommodate itself to the lenses, and require constantly an increase of power. In all cases leave some little for the adjustment of the eye to do, and then you may, after a time, diminish the power of the lenses needed.

" '*The Optician's Knowledge.*—Having now shown when spectacles should be employed, let us for a moment consider what are the requirements that should in all cases be possessed by the optician to whom the selection of spectacle lenses is entrusted.

" 'These requirements are—

" '1st. An intimate knowledge of the anatomical structure of the eye, and of the theory of vision.

" '2nd. An extensive acquaintance with the science of optics.

" '3rd. A sound mathematical knowledge.

" '4th. A practical acquaintance with the manufacture of lenses and spectacle frames.

" 'Having for the last fourteen years made the adaptation of spectacles my especial study, I have frequently met with cases where great injury has been done to the weak-sighted by the ordinary optician's improper selection of spectacles ; and I could heartily wish more of my medical brethren would bring their knowledge to bear on this subject,—which demands, and frequently calls forth, all the science and skill we possess, to meet the requirements of some abnormal cases that present themselves.'

" The knowledge which the eye conveys to the mind is boundless ; the relative condition of matter, large and small, of motion or rest, of colour, of solidity, of transparency, of brilliancy, of opacity, of space or distance. are only a few of the results attained by the exercise of the faculty of vision."

THE STEREOSCOPE.

" This most valuable and instructive instrument, and now not only a 'household word,' but a piece of domestic apparatus without which no drawing-room is thought complete, was invented by Professor Wheatstone, and subsequently modified by Sir D. Brewster. It demonstrates that man must have two eyes in order to enjoy the appreciation of distance, or, like the fabled Polyphemus, we might only have had one eye. Mr. Woodward gives the following excellent and familiar explanation of the phenomena produced by the stereoscope.

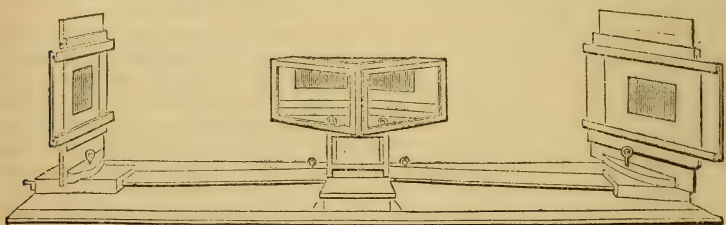
'*A Familiar Explanation of the Phenomena produced by the Stereoscope.*

" 'The name is derived from two Greek words, signifying to view solid things, and the instrument is so constructed that two flat pictures, taken under certain conditions, shall appear to form a single solid or projecting body.

" 'A picture of any object is formed on the retina of each eye ; but although there may be but one object presented to the two eyes, the pic-

tures formed on the two retinæ are not precisely alike, because the object is not observed from the same point of view.

"'If the right hand be held at right angles to, and a few inches from, the face, the back of the hand will be seen when viewed by the right eye only, and the palm of the hand when viewed by the left eye only; hence the images formed on the retinæ of the two eyes must differ, the one including more of the right side and the other more of the left side of the same solid or projecting object. Again, if we bend a card so as to represent a triangular roof, place it on the table with the gable end towards the eyes, and look at it, first with one eye and then with the other, quickly and alternately opening and closing one of the eyes, the card will appear to move from side to side, because it will be seen by each eye under a different angle of vision. If we look at the card with the left eye only, the whole of the left side of the card will be plainly seen, while the right side will be thrown into shadow. If we next look at the same card with the right eye only, the whole of the right side of the card will be distinctly visible, while the left side will be thrown into the shadow; and thus *two* images of the *same* object, with *differences of outline*, *light and shade*, will



Professor Wheatstone's Reflecting Stereoscope.

be formed—the one on the retina of the right eye, and the other on the retina of the left. These images falling on *corresponding parts of the retinæ* convey to the mind the impression of a *single object*;* while experience having taught us, however unconscious the mind may be of the existence of two different images, that the effect observed is always produced by a body which really stands out or projects, the judgment naturally determines the object to be a projecting body.

"'It is experience also that teaches us to judge of distances by the different angles of vision under which an object is observed by the two eyes; for the inclination of the optic axes, when so adjusted that the images may fall on *corresponding parts of the retinæ*, and thus convey to the mind the impression of a single object, must be greater or less, according to the distance of the object from the eyes.

"'Perfect vision cannot then be obtained without two eyes, as it is by the combined effect of the image produced on the retina of each eye, and

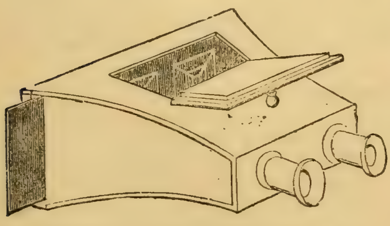
* "That this is the correct theory of single vision with the two eyes is evident. For if, while looking at a single object with both eyes, we make a slight pressure with the finger on one of the eyeballs, we shall immediately perceive two objects; but, on removing the pressure, only one will be again seen."

the different angles under which objects are observed, that a judgment is formed respecting their solidity and distances.

"'A man restored to sight by couching cannot tell the form of a body without touching it, until his judgment has been matured by experience, although a perfect image may be formed on the retina of each eye. A man with only one eye cannot readily distinguish the form of a body which he had never previously seen, but quickly and unwittingly moves his head from side to side, so that his one eye may alternately occupy the different positions of a right and a left eye; and, if *we approach a candle with one eye shut*, and then attempt to snuff it, we shall experience more difficulty than we might have expected, because the usual mode of determining the correct distance is wanting.

"'In order, then, to deceive the judgment, so that flat surfaces may represent solid or projecting figures, we must cause the different images of a body, as observed by the two eyes, to be depicted on the respective retinæ, and yet to appear to have emanated from one and the same object. Two pictures are therefore taken from the really projecting or solid body, the one as observed by the right eye only, and the other as seen by the left. These pictures are then placed in the box of the stereoscope, which is furnished with two eye-pieces, containing lenses so constructed that the rays proceeding from the respective pictures to the corresponding eye-pieces shall be refracted or bent outwards, at such an angle as each set of rays would have formed had they proceeded from a single picture in the centre of the box to the respective eyes, without the intervention of the lenses; and as it is an axiom in optics that the mind always refers the situation of an object to the direction from which the rays appear to have proceeded when they enter the eyes, both pictures will appear to have emanated from one central object; but as one picture represents the real or projecting object as seen by the right eye, and the other as observed by the left, though appearing by refraction to have proceeded from one and the same object, the effects conveyed to the mind, and the judgment formed thereon, will be precisely the same as if the images were both derived from *one solid or projecting body*, instead of from *two pictures*, because all the usual conditions are fulfilled; and consequently the two pictures will appear to be converted into one solid body.

"'The necessary pictures for producing these effects, excepting those of geometrical figures, which may be laid down by certain rules, cannot, however, be drawn by the hands of man; for, as Professor Wheatstone has observed, 'It is evidently impossible for the most accurate and accomplished artist to delineate, by the sole aid of his eye, the two projections necessary to form the stereoscopic relief of objects as they exist in nature, with their delicate differences of outline, light, and shade. But what the hand of the artist was unable to accomplish, the chemical action of light, directed by the camera, has enabled us to effect.



Brewster's Refracting Stereoscope.

"'Daguerreotype portraits and Talbotype pictures are therefore taken usually by two cameras placed towards the object, with a difference of angle equal to the difference of the angle of vision of the two eyes, which is about 18° when the object is eight inches from the eyes; hence, if these be carefully examined and compared with the original projecting objects, they will be found to be faithful representations of the object as seen by each eye respectively."

Directions for using the Stereoscope.

"'The objects must be so adjusted in the box, that only one picture may be seen in the centre, care being taken that the pictures are not reversed so as to be seen by the right eye instead of the left, and *vice versâ.*

"'The proper position of portraits, buildings, and similar objects cannot be mistaken; but where this is not readily perceived, it should be ascertained, when the object can be marked so as at once to be properly placed.

"'The eye-pieces, if allowed to turn, are marked with arrows, to indicate their proper position, these must be placed inwards, and in a right line with each other.

"'The eye-pieces in some instances are made to draw out to suit the foci of different persons. But those who use spectacles will generally see best with them on, bringing them forward *so as to lie flat on the eye-pieces*, which in such cases should not be drawn out.

"'Persons, however, with a defective sight in either eye will not be able to perceive the astonishing effects of the arrangement, as *two different images* will not be perfectly formed on the retinæ of the respective eyes.'"

REFRACTION OF LIGHT.

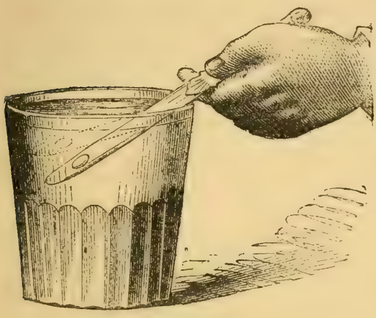
Some slight knowledge of the refraction of light may be of great importance to boys or lady-bathers. We shall subjoin a few remarks from "Cyclopædic Science," and a practical hint on the subject:—

"When a ray of light passes from one medium to another of the same density, and in a perfectly straight line, no alteration of its course takes place; but if the light passes in an oblique direction, its course is broken or *refracted—i.e.*, bent back from its natural path. To this branch of optics, which includes, perhaps, the widest field of inquiry, and traces the propagation of light through transparent, solid, liquid, and gaseous bodies, has been given the name of

Dioptrics.

"To prove that a straight line representing a ray of light is really bent when passing from a rare medium, air, into a denser one, such as water, nothing is easier than to place a bright shilling on the end of an ivory paper-knife, which is inclined in a large empty tumbler. On looking down the paper-knife a straight line only is apparent, terminating with the coin; but if the tumbler is filled with water whilst the observer is still looking down the flat surface, he will notice that at the point of juncture between the air and water a break takes place, and the end of the paper-knife, or all that part immersed, appears to be lifted up or bent upwards from its

natural course or direction. If a small pocket-pistol were now aimed at the coin and the bullet discharged it would certainly miss, because every visible object appears to be in a direction represented by a straight line drawn from it to the eye. A straight line ruled to the shilling would not touch it, the line must be ruled to, or the pistol aimed at, a point nearer to the spectator than the apparent position of the coin."



A Simple demonstration of the property of Refraction.

This refraction of light causes a river or stream to appear much more shallow than it really is, because the light of the bottom of the river is refracted as it comes out of the water, and the bottom consequently appears much nearer to the surface than it really is. The old "Sandford and Merton" experiment of placing a shilling in a bowl and moving away till you lose sight of it, and then getting some one to pour water in on it, which brings it to your view again immediately, by *refraction*, will exhibit this delusion, which it is well for boys and young-lady swimmers to know. A river is always *one-third* deeper than it seems to be.

REFLECTION OF LIGHT.

The rays of light are reflected from substances which are light and brilliant, as glass, crystals, steel, etc. Other substances absorb light, and always appear dark and dull.

We see ourselves in a mirror by the reflected rays of light from our own face, which, striking the surface, are reflected back to our eyes. The reason of this is, that the rays cannot pass through the metal with which the back of the glass is covered, and therefore, are thrown back in reflection. Looking-glass is an excellent reflector of light, water is a good one, and polished metal also; therefore before glass was known, the maiden gazed at her face in a limpid stream, or decked her tresses by the reflection of a polished steel mirror.

Light is of the utmost importance to health. Mothers should beware of a dark nursery; neither animals nor plants will flourish in dark places. It is to light that we owe the beautiful colours which deck the universe.

Every ray of light contains the colours of the rainbow. Some things reflect one of these colours and some another, according as their surface is constructed, physically and chemically. The swiftness or slowness with which the undulations of ether are thrown back from surfaces causes colour. Quick undulations produce *blue*, violet, and their different shades. In order to produce the violet colour, the undulations of ether must be 699 millions of millions in a second of time. Slow undulations produce red; the ether being thrown off the surface of the body at the rate of 477 millions of millions of vibrations in a second.

Yellow is the medium of undulations between blue and red. Red, blue, and yellow are the three primary colours, the others are compounds of them and affected by the same laws.

Black objects are without colour, because their surfaces will not reflect at all the undulations of ether which touch them, and which consequently cease. *White* objects set in motion all the undulations of ether, so as to reflect all the rays together, the effect of which is to produce white light.

There are of course many colouring matters in existence, that is, matters which affect these undulations of ether. Chlorophyll, for example, which gives the green colour to leaves and is formed by the agency of the sun's rays; vegetation grown out of sunlight is yellow and faded-looking.

ARTIFICIAL LIGHT.

Artificial light has next to be considered; and here the science of chemistry has been of the greatest service to man. In all ages, when science was little known, men provided themselves with artificial light. Probably the first lights used were torches of dry and resinous woods, but very early the use of oil for the purpose was discovered. It was olive-oil which fed the golden candlesticks in the Tabernacle, and in tombs of the greatest antiquity oil lamps have been frequently found.

Many other vegetable oils besides that of the olive-tree exist, and have been used for light. Nuts and almonds yield a pure sweet smelling oil; so do seeds of flax, hemp, and rape.

The cocoa-nut and the fruit of the African palm give us oil; animals and minerals also supply it; the sperm whale affords sperm oil; it may also be obtained from the pilchard. Mineral oils are of peculiar lustre and brilliancy; naphtha, pitch, asphalte, all burn. Petroleum springs have yielded a new supply of light.

A wax myrtle grows in Louisiana, from which berries enough may be gathered in a day to make eight pounds of tallow, which is much harder and purer than common tallow.

Young Wax Palm.

The candleberry myrtle of the United States has its fruit or nuts covered with a waxy secretion, which

may be readily separated and manufactured into candles. This wax has long been an article of commerce.

The Wax-palm and the Wax-tree of Japan, again, assist us in procuring artificial light; the candles made with it are coated with bees-wax. Bornean vegetable tallow, chemically treated, yields a valuable product for the same purpose.

Candles were at first made by dipping ropes, rushes, or the papyrus fibre into grease or wax. They are of great antiquity. Egyptian candles have been discovered, and Roman ones have been found in Shropshire.

The time-measuring candles of Alfred the Great are well known. Rush-lights are of the greatest antiquity of all candles. In the last century the poor in England and Ireland used no other candles, and they were of home manufacture.

Gilbert White, in his "Natural History of Selborne," gives the following account of this manufacture of our forefathers :—

"The proper species is the common soft rush, found in most pastures by the sides of streams and under hedges. Decayed labourers, women, and children gather these rushes late in summer. As soon as they are cut, they must be flung into water, and kept there, otherwise they will dry and shrink, and the peel will not run. When peeled, they must lie on the grass to be bleached, and take the dew for some nights, after which they are dried in the sun. Some address is required in dipping these rushes into the scalding fat or grease. The careful wife of an industrious Hampshire labourer obtains all her fat for nothing, for she saves the scummings of her bacon-pot for this use ; and if the grease abound with salt she causes the salt to precipitate to the bottom by setting the scummings in a warm oven. A pound of common grease may be procured for fourpence, and about six pounds of grease will dip a pound of rushes, which cost one shilling, so that seven pounds of rushlights will cost three shillings. If persons who keep bees will mix a little wax with the grease it will give a consistency, render it more cleanly, and make the rushes burn longer; mutton suet will have the same effect. A pound avoirdupois contains 1000 rushes ; and, supposing each to burn on an average but half-an-hour, then a poor man will purchase 500 hours of light—nearly twenty-one entire days—for three shillings. According to this account, each rush before dipping, costs one thirty-third of a farthing, and one-eleventh afterwards. Thus, a poor family will enjoy five-and-a-half hours of comfortable light for a farthing."

A pound and a half of rushes supplied a poor family of that period with light for a year.

Tallow-dips came next, probably, in the course of candle progress. In them, cotton is substituted for rushes as the wick, the mode of making them being much the same. Lengths of cotton are cut off, hung up by a loop, dipped into melted tallow, taken out again, and cooled; then re-dipped until enough tallow has been accumulated round the wick-cotton. Dips were followed by moulds. A frame with a number of moulds the size of the intended candles is made. A wick is passed down each mould to the bottom where it is pegged in—the little peg holding the cotton tight and stopping the aperture so that no fluid shall run through. The tallow is then melted and the moulds are filled. After a while, the moulds cool, the excess of tallow is poured off at one corner, and then

cleaned off altogether and the ends of the wick cut away. The candles can then be easily lifted from the mould, as they are narrower at the top than the bottom.

The Russian tallow, suet or fat of the ox, of which dips and old-fashioned mould candles were made, was converted, by Gay-Lussac, into the substance known to us by the name of stearine, in the following manner.—Fat, or tallow, consists of a chemical combination of fatty acids, with glycerine. It is first boiled with quick-lime, which unites with the palmitic, olive, and stearic acids, and separates the glycerine. Thus a soap is made. This is decomposed by sulphuric acid, which takes away the lime; the melted fatty acids rise to the surface, where they are decanted. They are again washed and cast into thin plates which, when cold, are placed between layers of cocoa-nut matting, and submitted to intense hydraulic pressure. In this way the olive acid, which is soft, is pressed out, and the hard palmitic and stearic acids remain. These are again purified by pressure at a higher temperature, and by washing in warm diluted sulphuric acid, when they are ready to be made into candles, and are harder, whiter, cleaner, and more combustible than the fats from which they are obtained.

Wax candles cannot be cast as tallow are. To make them, a number of cottons are hung on frames, and covered with metal tags at the ends to keep the wax from covering the cotton. Melted wax is then poured, by a man, over them; the frame being brought close to the wax-heater. When the first wax is cold a second coat is given, and so on till the candles are as thick as they are required to be. When finished, they are taken down and well rolled upon a fine stone slab; the conical top is moulded by properly-shaped tubes, and the bottoms cut off and trimmed. The wicks of tallow candles require snuffing because they are never quite consumed in the flame, the outer cone preventing a sufficient supply of oxygen reaching it for complete combustion. Wax and composite candles do not require snuffing, because the wick is so plaited as to bend into the outer cone of the flame where it is completely consumed. This cannot be done with tallow candles, because this bending of the wick into the outer cone would melt the tallow on one side too quickly, and cause the candle to gutter; tallow melting at a much lower temperature than wax or stearine.

The continuous flame of the candle is caused by the heated wick decomposing the wax or tallow, and forming vapour of water and carbonic acid gas. The hydrogen of the candle combining with the oxygen of the air forms the former; the carbon of the candle combining with the oxygen forms the carbonic acid gas.

As the air comes to the candle, it moves upwards by the force of the current which the heat of the candle produces, and cools all the sides of the wax or tallow, so that it keeps the edges much cooler than the part within; the part within is heated by the flame which runs down the wick as far as it can go before it is extinguished, and forms a little cup of liquid tallow or wax, while the edges never melt. Of course, if by leaning the candle on one side, a current of air is made in a slanting direction, the cup will become lopsided and the fluid will run over, or gutter, as it is called.

The horizontal formation of this cup is of the first importance, for if it be not horizontal the fluid will run away in guttering.

Fluted candles are not good for burning on this account; they have not the nicely formed edge to the cup, which is the perfection of a candle, and consequently prove wasteful from guttering.*

The fuel for the flame is this melted part of the candle which is carried up the wick by capillary attraction—which we have already explained in a note at p. 59. Capillary attraction is sometimes unpleasantly but well exemplified by some careless person leaving the corner of a towel in water—the water, by the power of capillary attraction, spreads all over the towel and wets it through. In the like manner, water rises through a sponge, or a lump of sugar. Thus the melted tallow ascends the wick; other particles follow from their mutual attraction to each other, and are gradually consumed. Whenever the flame descends into the melted tallow it is instantly extinguished, therefore the flame remains in the place where we always see it.

The flame of a candle consists of three cones; the inner or hollow cone, in which no combustion takes place, and which is filled with invisible vapour raised from the candle by the heat of the wick, and which cannot burn because it does not come in contact with the outer air; an intermediate cone, where hydrogen is chiefly consumed with particles of carbon which it raises to a white heat (from thence the light chiefly proceeds); and the outer cone in which the carbon is consumed. The flame of a candle produces light because the chemical changes made by combustion excite undulations of luminous ether which, striking the eye, produce light. The light of the flame is yellow, because that is the colour of carburetted hydrogen when burning; and here we may observe that yellow rays produce the greatest amount of light, as red rays produce the greatest amount of heat.

The flame of a candle is of an oblong shape, brighter at the top than towards the bottom; it is carried upwards by the ascending air, which, heated by the candle, goes rapidly upwards. The darker parts, towards the bottom of the flame, are particles of the fuel not in a perfect state of ignition.

Certain products result from the combustion of a candle. One of these products is charcoal, or soot. Some of our readers may have seen etchings done on a card rapidly passed through, or over a lighted candle, till it is shaded black, or dark brown, with soot. But, if the candle burns well, that is, if the combustion is perfect, no smoke or soot will proceed from it; soot being, as we have said, the escape of unconsumed fuel.

Water also is produced from the flame of a candle—*i.e.*, vapour of water which, if cooled, will condense as water. Water is likewise produced from the combustion of gas and from that of oil—a pint of oil fairly and properly burned produces rather more than a pint of water. In fact, all combustible substances which burn with a flame produce vapour of water, which may be condensed if anything cold enough is held over it.

The combustion of a candle also produces, as we have said, carbonic

* The action of the ascending current of air on the outside of a candle may be seen when it has guttered. The thickened piece at the side forms a little pillar, as the candle goes on burning, because as it rises higher above the rest of the tallow or wax, the air gets better round it and it is more cooled.

acid gas, very often called fixed air,* and evolves heat from it precisely as we by breathing make heated carbonic acid gas, and thus feed the animal heat. The candle cannot burn without oxygen; neither can we live without oxygen, as we have before observed.

A lamp burns on the same principle as a candle, and is probably long prior to it in antiquity.

The oil is the fuel which, by capillary attraction, ascends the wick and is consumed by the carbon combining with the oxygen of the air. The Argand lamp is remarkable for its excellent combustion. A current of air is made to pass through the middle of the flame, in consequence of which the carbon of the interior of the flame is consumed as well as that in the outer coating. These lamps do not smoke, because the combustion is perfect. Lamp-glasses diminish the smoke from lamps by producing a draught, which supplies more oxygen to the flame; they also concentrate and reflect the heat of the flame, thus helping its combustion.

Lamps smoke, either because the wick is turned up too high and more carbon is separated from it than can be consumed by the flame, or from the wick having been cut unevenly. When this is the case, the points of the jagged edge project into the flame where there is not enough oxygen to consume the carbon and, of course, cause smoke.

Candles and lamps will often spirt when rain is at hand. This is caused by the air being filled with vapour which penetrates the wick, where, being formed into steam, it expands suddenly, and produces a little explosion.

We cannot conclude these few remarks about the combustion of carbon without adding to them a passage from Professor Faraday's admirable lectures on the "Chemical History of a Candle," which we recommend to the perusal of our readers. He is speaking of the creation of carbonic acid gas:—

"You will be astonished when I tell you what this curious play of carbon amounts to. A candle will burn some four, five, six, or seven hours. What then must be the daily amount of carbon going up into the air in the way of carbonic acid? What a quantity of carbon must go from each of us in respiration? A man, in twenty-four hours, converts as much as seven ounces of carbon into carbonic acid; a milch cow will convert seventy ounces, and a horse seventy-nine ounces, solely by the act of respiration; that is, the horse in twenty-four hours burns seventy-nine ounces of charcoal, or carbon, in his organs of respiration to supply his natural warmth in that time. All the warm-blooded animals get their warmth in this way, by the conversion of carbon, not in a free state, but in a state of combination. And what an extraordinary notion this gives us of the alterations going on in our atmosphere. As much as 5,000,000 pounds, or 548 tons of carbonic acid is formed by respiration in London alone in twenty-four hours. And where does all this go? Up into the air. If the carbon had been like the lead which I showed you, or the iron which, in burning, produces a solid substance, what would happen? Combustion could not go on. As charcoal arises it becomes a vapour and

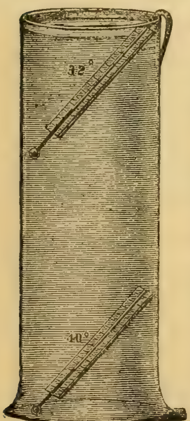
* It was so called by Dr. Black because it is found fixed in chalks, shells, corals, and all limestones. Marble is a compound of carbonic acid and lime.

passes off into the atmosphere which is the great vehicle, the great carrier for conveying it away to other places. Then what becomes of it? Wonderful it is to find that the change produced by respiration, which seems so injurious to us (for we cannot breathe air twice over), is the very life and support of plants and vegetables that grow upon the surface of the earth. It is the same also under the surface in the great bodies of water; for fishes respire upon the same principle, though not exactly by contact with the open air."*

WATER.

Water is another of the great agents of life. Without it the whole world must perish. On its uses we have no occasion to dilate. It is one individual thing. It never changes. It can be added to by careful adjustments for a little while; it can be taken apart and analysed, but it always remains *water*, either in a solid, liquid, or gaseous state. It can be cooled into solid ice, or heated into vapour, but it may always be restored to its original state by thawing or condensation. In both cases of transformation it gains a wonderful increase of volume. As ice, it swells so violently that it will burst iron; and as steam, it expands and evaporates in a manner which reminds one of the genius the fisherman released from a bottle in the "Arabian Nights;" or if restrained, it becomes the mighty and dangerous power which science has chained and fettered to man's chariot wheels.

A knowledge of the expansion of water by cold may save many domestic inundations in the time of severe frost. The water pipes should be kept (if possible) warm enough to prevent the water freezing; the taps should be half turned, to let it drip a little. The jugs and bottles, in bedrooms which have no fires, should only be *half* filled with water.



Dr. Hope's experiment.

Water becomes ice at a temperature of 32 degrees. It is a remarkable exception to the general rule that cold contracts the volume of liquids. "Water which becomes solid in all parts of the globe at the level of the sea at 32° Fahrenheit, or of 0° Centigrade," says Professor Pepper, "expands instead of contracting when the water reaches a temperature of 40° Fahrenheit, and falls to 32°: the amount of expansion is not very great, being one part in ten thousand at 32°."

But the fact, which at first was thought illusory, is indisputable, as proved by the experiments of Dr. Hope. He placed two thermometers in a large vessel of water, the one being at the top, and the other at the bottom. Up to a temperature of 40°, the cold water contracted, and, being the heavier, sank to the bottom, and the lower thermometer registered the greatest cold. After 40° was passed, the water evidently expanded; the coldest water was found to be at the top, and duly recorded by the thermometer sinking to 32°, whilst the warmer water, which ought, according

* "Chemical History of a Candle," pp. 165, 166.

to the law of expansion, to have been uppermost, remains at the bottom, and therefore was heavier, bulk for bulk, than the water about to crystallize. It is this remarkable exception that preserves the fish in the lakes and rivers. During the severe winters of Siberia the water is frozen many feet thick; but it is related by one of the exiles in this roomy but severe prison, that part of their amusement in certain seasons consisted in fishing in great holes in the ice, and all they caught they partially but immediately ate raw and living, biting out a piece of the back, which was declared to be a most agreeable tit-bit.

"It is evident that the fish, if frozen, could have no power of locomotion —they must die; so that on the arrival of winter the Siberian waters would throw up their dead fish, as all would be killed if the water, which is a very bad conductor of heat, did not remain at 40° at the bottom of the lakes, rivers, and seas.

"Bismuth is said to possess the same curious property of expanding whilst it is being cooled, and thus iron bottles filled with melted bismuth, and plugged with a screw, burst at the moment the metal assumes a solid state."

This expansion of ice is supposed to be caused by the ice-crystals not fitting as closely to each other as the particles of water do.

Ice is considerably lighter than water; it floats on the surface of streams and ponds while the water flows beneath it, and is not chilled by the ice into freezing, when the surface is once covered; for as we have said before, water is a bad conductor of heat or cold, and the ice acts as a shield to prevent the cold air freezing the river by *convection.* We see divine wisdom in this law, for if the ice were a good conductor of cold, or if it were heavier than water and were to sink to the bottom, rivers would become blocks of solid ice which no heat could thaw, and all creatures inhabiting them would perish. As it is, the ice preserves the water fluid for us in the severest weather. Of course the ice *thickens* in protracted cold, because the heat of the water immediately beneath escapes through its pores into the cold air; but our English frosts never last long enough to allow this slow conduction to convert the whole of a large body of water into ice.

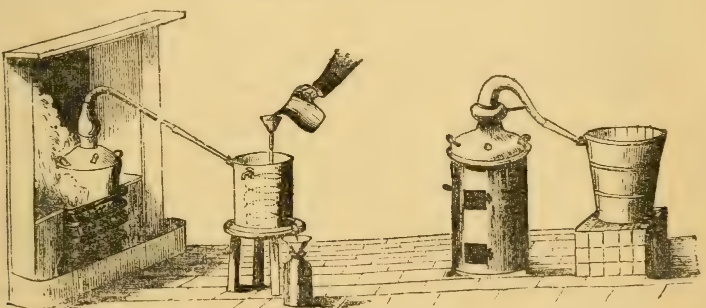
Water is composed of two gases, oxygen and hydrogen—eight parts oxygen to one part hydrogen. It is fluid because its particles are kept separate by latent heat. When a certain quantity of this heat has been driven out the water becomes solid—that is, ice. We speak of water as salt or brackish water, hard water, and soft water. Salt water is that of the sea, which holds in solution a quantity of saline matters. Hard water is that obtained from springs in the ground, from rivers, pumps, and wells. Soft water is that of rain.

"Water is presented to us in nature having different degrees of purity; hence we speak of hard or soft water. The former may contain calcium carbonate and sulphate, magnesium carbonate and sulphate, sodium sulphate and chloride, and many other substances, in considerable quantities, especially if the water flowing into the well be derived chiefly from surface drainage. When rain-water has been collected after several hours' rain, it is almost in a state of purity, containing then only certain gaseous matters in solution: such water is usually called soft, because it is free from the salts already mentioned. If the rain-water be collected after a long

drought, it may then contain nitrates and salts of ammonium, and, if near the sea-side, would always contain sodium chloride or common salt."

River-water contains a less proportion of saline matters in solution: it is not, however, so good to drink as spring-water, because it frequently occurs that rivers receive the sewage of large towns, and hence the water contains organic matter in solution, and, should the water be taken whilst this organic matter is undergoing decomposition, very serious consequences may result to the person drinking it. It is now, however, a rule in sanitary matters to endeavour to divert the sewage from our noble rivers when possible, and with the help of proper filters the Thames water is now potable and wholesome.

All rivers flow into the sea, hence sea-water contains a larger quantity of sodium chloride, and many other salts, in solution, likewise organic matter; but, curious to say, it remains in a uniform condition so far as the quantity of saline matter is concerned, and the specific gravity varies little, the mean being 1·027, pure water being 1·000.



A Still placed on a common fire or fitted to a proper furnace.
Both the Stills have worm tubs or condensers.

When sea-water or any other hard water is placed in a still and boiled, the earthy or saline matters are left behind, and, the steam only being condensed, pure water is obtained.

Some water is impregnated with lime, some with salt, some with iron. Mineral springs are caused by the water in its passage through the ground dissolving and absorbing metallic substances.

It is difficult to wash linen in hard water because the soda of the soap combines with the sulphuric acid of the salts of hard water, and the oil of the soap with the lime, and then it floats in white flakes on the water.

Wood ashes will, however, render hard water soft. The carbonate of potassa in the ashes, and the sulphate of lime in the water unite, and form into sulphate of potassa and carbonate of lime; the ashes also render some of the soluble salts of water insoluble; they fall to the bottom of the pan or tub as a sediment, and thus the water becomes fit to use for washing. It will then cleanse linen by dissolving the stains on it, while the soap has the power of uniting with grease, and rendering it soluble in water.

Water that has run through chalk is the worst of all for washing pur-

poses. It is also bad for cooking vegetables and for making tea; a pinch of soda will soften it, by decomposing the earthy salts present in it.

Water flowing from granite rock is the purest: slate formations also are favourable to the purity of water flowing from them.

Rain-water is *soft* because it has not been impregnated with earths and minerals; it is consequently very pleasant to use for washing. It dissolves the soap, instead of decomposing it as hard water does.

Rain-water is produced chiefly by evaporation from the seas, but it is not salt, because saline matters will not evaporate. They remain in the bed of the ocean, the fresh vapour alone ascending from it into the cold regions of the sky; from whence when condensed by cold air it falls in rain.

Rain-water is more fertilizing for the soil than pump water. It contains more carbonic acid, and a small quantity of ammonia, which nourishes the young plants.

Rain is in fact a great benefit to us, not only for "watering the earth," but because it dissolves as it falls all noxious exhalations that may be lingering in the air, it mixes the upper air with the air of the lower regions, and washes out sewers and ditches, the stagnant water in which might bring diseases.

Rain is caused by a cold current of wind condensing the vapour of the clouds or the air, and precipitating it to the earth in drops. The vapoury particles in their descent attract each other, and those which are quite near unite and form drops. But in order that rain may fall, the atmosphere must be saturated with vapour; unless this be the case the vapour will be held in solution in spite of the cold currents.

A passing cloud coming in contact with cold air is condensed and falls in rain. More rain falls by night than by day, because the cold of the night condenses the air, and decreases its power of holding vapour in solution.

Snow is the vapour of the air condensed by a cold current *below freezing point*, and precipitated as a shower of crystals. It is of great service, for it nourishes the earth and keeps it warm. It is a very bad conductor, having a great deal of air in its crystals; it therefore prevents the heat of the earth passing off into the colder air, while it nourishes the soil with the carbonic acid it contains, which passes into every pore of the ground as the snow melts. Hail is frozen rain; that is, rain which passing through a cold current or layer of air is turned into ice. Two strata of clouds of opposite electricities, and two currents of air, are the causes of hail; the lower cloud containing resinous electricity is the one precipitated as hail.

The density of the air is lowered previous to a storm; this is shown by the rapid fall of the mercury in the barometer which is held up by the pressure of the atmosphere. This changed condition of the air causes sometimes a painful oppression; the air being lighter than usual does not balance the air in our bodies, and we have in consequence a disagreeable feeling of distension.*

Then again air laden with vapour has less oxygen, and in fact has a ten-

* This distension in the tissues of the feet, caused by the rarefied condition of the air before a storm, is the reason of corns aching. They cannot distend equally with the softer flesh, and thus irritation is produced in the fibrils of the nerves.

dency to depress the nervous system. It is therefore not "mere fancy," as it is often called, which makes sensitive people susceptible of changes in the weather. All animals appear listless and drowsy when rain is at hand, because the air is supplying less oxygen. Sheep will lie under a hedge; horses neigh; cattle low from the same cause. Smoke falls, because the air is not dense enough to keep it up.

Moist air is very objectionable to the housewife for another cause—it rusts her bright stoves and fire-irons. The oxygen in the air combines with the surface of the metal and *oxidizes*—that is, *rusts*—the iron. The only way to prevent iron from rusting in moist air is to grease it—grease preventing the humidity of the air coming in contact with the surface of the iron.

The oxygen of dry air will not rust iron; moisture (or a very great degree of heat) is necessary to bring into action the affinity of oxygen for steel. Copper and zinc also are tarnished by oxidation. The oxygen from moist air combines with the surface of these metals, and tarnishes them; they do not rust as steel does. Lead is rendered dull by moist air in the same way, and silver oxidizes and tarnishes. Platinum is the only metal which never oxidizes in moist air. Gold also is little affected by the atmosphere if it—the gold—be quite pure.

We must now speak of water as a portion of our food, and a very important portion it is.

It is contained more or less in everything we eat; when the food is of a dry nature, as wheat, peas, oatmeal, maize, etc., more drink is required.

Spring-water is more agreeable to drink than soft water, because it contains carbonic acid which gives it the life and sparkle we all prefer, and singularly enough the acid so deadly to inhale is conducive to health when drunk in water, acting as a refrigerant and allaying irritability of stomach.

The carbonic acid is produced in water by the presence of bicarbonate of lime in it. It escapes very quickly into the air, leaving the water flat and stale, therefore it is best drunk fresh from the pump, and should not be let stand long uncovered before using.

The quality of the water of springs depends a great deal on the soil through which they pass; from granite and slate formations it is very pure; sandstone is inferior in this respect, while lime and magnesia render the water, as we have seen, very hard, and if found in large quantities, make it injurious to health. Hard water is found most commonly to contain chalk—*i.e.*, carbonate of lime.

If the presence of this carbonate is suspected—and it will lurk in clear bright sparkling filtered water—it may be tested by boiling, when the chalk will at once be thrown as a "furr"* or coating on the inside of the vessel in which it has been boiled.

If the lime in the water, however, is in the condition of the sulphate,—that is, gypsum, no amount of boiling will precipitate it. The only thing then to be done is to put carbonate of soda into the water in sufficient

* This furr may be removed from kettles by boiling in them a little sal ammoniac. The hydrochloric acid unites with the lime of the furr, and the carbonic goes to the ammonia. Both of these new compounds dissolve, and can be very easily washed away.

quantity to convert the sulphate of lime into the carbonate. If the water be then boiled the chalk will be deposited as furr, and sulphate of soda will be left in the water. Hard water may be made softer by exposure to the air in a wide vessel—as a flat pan. The carbonic acid in it will escape into the air, and the mineral salts which cause its hardness will subside. It is lime and magnesia in various forms which cause "hardness" in water.

Water contaminated by lead cisterns or pipes has proved very injurious. A *ninth part* of a grain of lead per gallon will affect the health of a whole family. But happily this injurious substance may be easily removed by filtering the water *through sand.*

Water may be purified in many ways. Pouring it from a height into a flat pan, so as to allow the air to mix with it will improve it. Stirring it about with freshly-made animal charcoal purifies it. You can purify a gallon of water with twenty drops of sulphuric acid. "An ounce of powdered alum dissolved and stirred into a hogshead of putrid water will precipitate the foul matter in a few hours, and render it pure again."

Chips of oak wood put into water will purify it. The tannic acid in the oak effects this change. The worst impurity in water proceeds from sewage, which is apt to get into rivers and old wells. Nitrogenous products when they become mixed with a large quantity of river water, absorb oxygen and are slowly converted into inorganic matter, the nitrogen they contain being converted into nitrous and nitric acids. These acids unite with lime, etc., and form nitrites and nitrates, while the carbon of which they were composed becomes carbonic acid. The hydrogen in them is formed into water. If these nitrites or nitrates of lime and magnesia are found in any water used for drinking purposes it should be avoided.

Generally water had better be filtered, as it might look both bright and sparkling, and be even pleasant to the taste, and yet contain many impurities. Filters are very cheap—a pretty glass one resembling an hour-glass in form, can be bought for 7*s.* 6*d.* at the Crystal Palace; or any poor man may make himself one in accordance with the directions given at the South Kensington Museum, which we transcribe for our readers.

The Poor Man's Filter made with a Flower-pot.—Plug the hole at the bottom, but not too tightly, with a new piece of sponge, lay over it powdered charcoal two inches thick; cover this with a layer of two inches of clean sand; put on that a layer of clean coarsish gravel three inches deep.

Carbonic acid can be forced into water by pressure to a considerable extent; and effervescing draughts are made upon this principle. The carbonic acid contained in the drink is imprisoned by the cork and thus forced into the liquid by pressure, and absorbed in it. But when the cork is removed the carbonic acid flies off in bubbles or effervescence. Soda water contains eight times its bulk of carbonic acid gas which has been forced into it by pressure; of course when it is uncorked the escape of the imprisoned carbonic acid is somewhat vehement. Ginger beer *pops* from the same cause when opened, because carbonic acid has been forced into it by the cork. All vinous fermentation produces carbonic acid. The presence of carbonic acid also gives a pleasant acid taste to soda water, ginger beer, champagne, and cider.

Carbonic acid dissolves so readily in water, that water will take up in solution a volume of this gas equal to itself.

It is expelled by boiling, therefore boiled water always tastes flat and insipid.

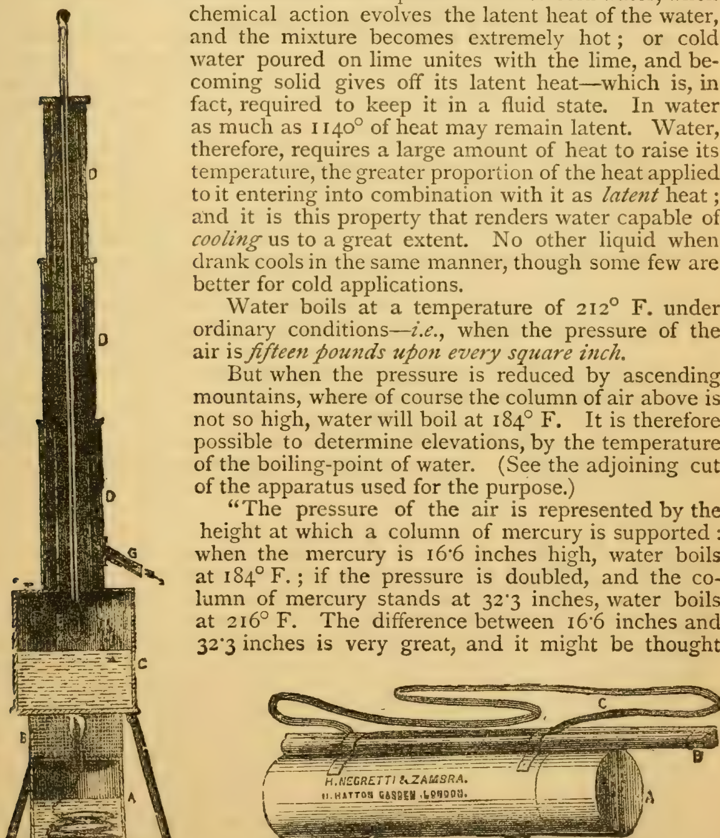
Water in its ordinary state contains a considerable quantity of atmospheric air dissolved in it. It contains more oxygen than we find in the air itself; and this property of dissolving a large proportion of oxygen renders water fit to be the dwelling place of fish and other creatures which depend on it for the oxygen they breathe.

Water contains much latent heat. This can be proved by pouring cold concentrated sulphuric acid into cold water, when chemical action evolves the latent heat of the water, and the mixture becomes extremely hot; or cold water poured on lime unites with the lime, and becoming solid gives off its latent heat—which is, in fact, required to keep it in a fluid state. In water as much as 1140° of heat may remain latent. Water, therefore, requires a large amount of heat to raise its temperature, the greater proportion of the heat applied to it entering into combination with it as *latent* heat; and it is this property that renders water capable of *cooling* us to a great extent. No other liquid when drank cools in the same manner, though some few are better for cold applications.

Water boils at a temperature of 212° F. under ordinary conditions—*i.e.*, when the pressure of the air is *fifteen pounds upon every square inch.*

But when the pressure is reduced by ascending mountains, where of course the column of air above is not so high, water will boil at 184° F. It is therefore possible to determine elevations, by the temperature of the boiling-point of water. (See the adjoining cut of the apparatus used for the purpose.)

"The pressure of the air is represented by the height at which a column of mercury is supported: when the mercury is 16·6 inches high, water boils at 184° F.; if the pressure is doubled, and the column of mercury stands at 32·3 inches, water boils at 216° F. The difference between 16·6 inches and 32·3 inches is very great, and it might be thought



Apparatus for determining Elevations by the Temperature of the Boiling-point of Water.

that such a fall in the barometer could only be demonstrated by artificial means, and by the creation of a partial vacuum with an air-pump. But it must be remembered that there are certain spots on the surface of the globe where the adventurous traveller may ascend nearly three miles above the level of the sea.

"The famous De Saussure ascended to the summit of Mont Blanc, which is 15,650 feet above the level of the sea, and where water boils at a temperature of 185·8° F., and the barometer stands at about seventeen inches. The boiling-point of water is lowered about one degree for every 590 ft. De Saussure's observations were verified by Tyndall in August, 1859, when the temperature of boiling water at the summit of Mont Blanc was found to be 184·95° F.

"It is by the careful observation of the temperature at which water boils that the height of any hill or mountain may be determined. Since Dr. Wollaston constructed his instrument for measuring heights by the observation of the boiling-point, improvements have been made, as shown in figure annexed."

Water simmers before it boils. This is caused by its being heated by *convection.* The water nearest to the fire becomes hot first, and being heated rises, while its place is supplied by the colder portion above. This is in its turn heated and rises up till the whole body of water boils; the ascending current of hot water rises through the centre of the mass, the cold currents descend by the metal sides of the kettle.

It is necessary, as heated water thus always ascends to the surface, that heat should be applied to the bottom, not the top of a kettle or boiler; for if it were applied to the top of a kettle the water below the surface would never boil. If it is desired to cool a liquid, *cold* must be applied to the top of the vessel; for cold portions always descend and will allow the under warm portions to ascend and be cooled in their turn. The ascending and descending currents of boiling water produce the agitation called "simmering." The bubbles collapse beneath the surface, and the steam is condensed to water again. When it boils the heated bubbles rise to the surface, and steam is thrown off. The entangled air escaping from the water produces the sound called "singing," which ceases when all the water boils.

Water expands, as we have said, with heat, consequently if a kettle be quite filled with cold water it must run over when the water is expanded by heat. Even when not quite filled this occasionally happens from rapid boiling. Steam escaping from the lid and spout are proofs that a kettle boils. Any good conductor placed in it, as an iron spoon, will delay the boiling of water, by carrying off a portion of the heat to itself. Water that boils is not rendered warmer by continued boiling after it has reached the boiling-point 212°, it only escapes in steam—or, as the housewife says, "boils away." Steam ascends as vapour into the higher regions of the air. It is really invisible, but condensed by the coldness of the air becomes a mist. This can be seen by any one observing the spout of a kettle—an empty space will be observed between the spout and the little column of steam. Steam is *really* there also, but is invisible because the air has not yet chilled it. It is not possible to *boil* a pot of water by immersing it *in* boiling water, though gravy, etc., may be *warmed* thus;—the heat is never sufficient, but brine, which boils at a *higher* temperature will

boil the water in another vessel immersed in it. Ether *can* be boiled in a vessel immersed in water, because it boils at a lower temperature, 96°.

Water is best kept in uncovered cisterns, because the air prevents or annihilates putrefaction by supplying it with oxygen. It should never be allowed to stagnate; the water in the cistern should be drawn off and replaced every twenty-four hours *if possible.*

But do not leave a cistern or tank of water uncovered near any offensively smelling objects—if it is in the scullery or near a dung or dirt heap *have it covered*, but draw it off frequently, and have the cistern cleaned out every six months at the very least.

Boiling water is an admirable way of purifying it, but as it becomes very flat afterwards by losing its carbonic acid, aerate it again by pouring it at as great a height as you can from one jug to another six times. It will then be fresh and sparkling.

The temperature at which water is drank, is of importance in a sanitary point of view. Below 45° it is an astringent: at 60° a diluent, and of use for removing indigestion; a celebrated gourmand of the Regency was accustomed to drink a wine-glass of water at 60° after his dinner daily.

Water of a temperature from 70° to 80°, drunk the first thing in the morning, is an excellent antibilious dose. Water is *cold* at 80° to the hand; it is tepid from 86° to 90°, at 100° it is warm, at 212° *boiling.*

The following are some of the tests for water:—Proportion a few drops of the one used to a wine-glass or tumbler of water.

To detect alkaline carbonates and sulphates—a solution of nitrate of barytes. If they are in the water it will cause a turbid appearance.

To precipitate lime:—a solution of oxalate of ammonia.

Free carbonic acid is detected by an appearance of milkiness when an equal quantity of lime water is added to the water tested. Magnesium waters possess the look and properties of magnesia. If the presence of magnesia be slight and only suspected, a solution of carbonate of ammonia, followed immediately by a solution of potash of soda may be used to test it; if magnesia be in the water it will become milky. Water impregnated with iron is called chalybeate; and it is called sulphurous when impregnated with sulphuretted hydrogen gas.

Pure water is at its greatest density, or heaviest, at 39° of Fahrenheit, that is, at 7° above freezing; if the temperature rises *or falls*, the water expands.

Salt (sea) water may be rendered fit for washing purposes by adding soda to it. The soda acts by decomposing the chlorides of calcium and magnesium, and by supplying excess of free soda prevents the chloride of sodium from injuring the soap. When it is thrown in the water it will become cloudy, and a white precipitate will be thrown down. When it has settled the water may be poured off for use.

FERMENTATION is a change effected in the elements of a body composed of carbon, oxygen, and hydrogen *without* nitrogen. This change produces alcohol and carbonic acid, and if the process be continued the alcohol will be changed into acetic acid or vinegar. Alcohol is, we all know, spirit: the carbonic acid produced by fermentation causes beer or ale to be brisk and sparkling; if suffered to escape by the cask being left open too long, the malt liquor becomes *flat*, as it is called.

Without fermentation we can have no wine nor beer; yeast, the foam of beer, or of some similar liquor, is produced by fermentation, and consists of a substance called *gluten*, undergoing putrefaction, in which condition it possesses the property of exciting fermentation. It is the presence of nitrogen in it which gives yeast the power of causing fermentation, which cannot take place unless the gluten is in a putrefying state.

Yeast is put into the infusion of malt called sweetwort, to make it into beer, because the presence of a putrefying body, containing nitrogen, is required to convert sugar into alcohol, and by it the sugar of the wort is changed into alcohol and carbonic acid, and the gluten (of which sweetwort contains a great deal) is changed into yeast.

Grape-juice contains a sufficient quantity of a nitrogenized substance, like yeast, to produce fermentation without any external assistance.

Fermentation in bread is produced generally by yeast, and makes the dough rise, from the carbonic acid gas which is evolved by it. The sticky texture of the "sponge" will not let this gas escape, and it forces up little bladders all over the dough. Heat increases fermentation and expands these gas bubbles, in consequence of which the dough becomes more porous and lighter. For this cause the cook places her dough before the fire to rise; if the dough were to be removed and get cold the air bubbles would condense, the paste would fall, and the bread would be heavy.

Putrefaction is a change effected in the elements of a body composed of carbon, oxygen, hydrogen, and nitrogen.

At the freezing-point of water all putrefaction ceases, and also at the boiling-point.

Perfectly dry substances never putrefy.

Putrefaction cannot take place if there is *no air*. Air contains the germs of low forms of organic life. Substances can neither putrefy nor ferment without these infusoria being present.

When meat becomes tainted and putrefaction has commenced, it can be stayed and the taint removed by washing it with pyroligneous acid, by covering it for a few hours with powdered charcoal, or by putting a few lumps of charcoal into the water in which it is boiled. Both these substances combine with the putrescent particles and neutralize their offensive taste and smell.

Meat should never be exposed to the action of moonlight, for on a clear moonlight night it will radiate heat freely and grow wet with dew, which causes rapid putrefaction.

ELECTRICITY.

We have already spoken of rain, hail, and snow; it is time to discuss the great agent of storms—Electricity, which exists latent probably in nearly all terrestrial objects, and is seen in nature as lightning.

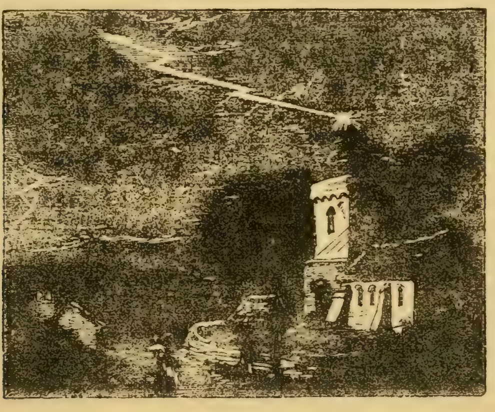
There are two kinds of electricity—Vitreous and Resinous; called by Dr. Franklin the Positive and Negative. Vitreous electricity is so called because it was first produced by rubbing glass: Resinous, because it was best procured by rubbing resinous substances.

Electricity accumulates in the clouds from different sources: from evaporation from the earth's surface; from chemical changes in the air; and from friction between currents of air of unequal temperature crossing

each other. Lightning is this accumulated electricity discharged from the clouds, by one kind of electricity rushing from a cloud to unite itself with the other kind, in another cloud, or in the earth. The flash parts the atmosphere, and the concussion made when the air closes again, produces (in great part) the noise which we call thunder. When the lightning cloud is near the earth all the vibrations of the air (on which sound depends) reach the ear at the same moment, and produce one terrific crash. When the lightning cloud is a long way off, and some of the vibrations of sound have further to travel than others, the peal reaches the ear at intervals and is broken and irregular. The vibrations produced in the *lowest* portions of the air are heard first. The flash is instantaneous, but sound takes a second of time to travel 380 yards.

The lightning clouds are often very near the earth. They are rarely more than 700 yards from the surface when discharged, and the nearer they are the more likely they are to discharge. Any high object which reduces the distance between them and the earth, as steeples, high trees, etc., will discharge them.

Electricity passes through a conductor in a quiet and invisible form: when it cuts the air it becomes visible, because the atmosphere is a bad conductor.



Example of the zigzag path of Lightning.

Lightning is forked when the flash is divided by terrestrial objects which attract it; it is zigzag when it condenses the air in its immediate path, and flies from side to side that it may pass where there is least resistance. When the distance a flash has to pass is very short, the air is not condensed by it and the flash descends straight.

Lightning destroys life when it passes through the body of men or animals, by its violent action on the nerves; it therefore possesses a degree of peril for us which makes some of its properties, and the laws which direct it, matters of important knowledge.

Lightning in seeking the earth will always choose the *best* conductors,

and will leap from a bad conductor to a good one. It also seeks a path by the highest object; or rather, perhaps, it is *high* objects which discharge the electrical cloud. It is well, therefore, to know which are the conductors that are especially beloved by the fiery visitor. Water is an excellent conductor; so are metals of all kinds. Vapour is a good conductor; the body of man itself is another, the lightning passing through the human fluids. It is therefore unwise to stand near or under a tree in a thunder-storm, because the tall tree would attract the lightning, and as the man would be the better conductor, the flash would diverge from the tree to him; but if he were at a sufficient distance the tree might save him from the flash, because it would be higher and would draw the lightning to itself.

It is dangerous to lean against a wall, because the electric fluid will sometimes run down it, and would leave the wall for the better human conductor.

All sorts of metals are good conductors, and therefore attract lightning; they should not be worn at the time of a storm nor taken in the hand.

A crowd conducts lightning, the vapour arising from it increasing the conducting power of the air above.

Metals conduct in the following order: copper is the best conductor; zinc is next in power; iron next; and lead least.

Iron houses would be safest to inhabit, because the metal walls would draw the lightning from their inmates to the ground. Iron bedsteads are also safest in lightning storms, as they are excellent conductors, and the lightning would prefer the iron pathway to one through the human body. For the same reason the knights of old were safe in their steel armour, which lightning would prefer to the knight himself as a road to the earth, which it seeks.

This power of conducting electricity has caused the placing of lightning conductors by churches, powder magazines, and other public buildings. But these conductors must be of proper size and kept in perfect order, as if broken, cracked, or defective, the electric fluid will fly from them to the building. It is safer not to sit near the fireplace in a thunder-storm, and the middle of the room is to be preferred. Mattresses and beds are non-conductors, and therefore afford security. Silk is a non-conductor, and glass; therefore glass windows protect from lightning in a storm. Pieces of metal of all kinds attract it, and are dangerous. *Wet* is a protection; wet clothes will conduct lightning from the human body, but it is dangerous to stand near water.

The electric fluid makes itself felt in our dairies and cellars. It produces a disturbance in the condition of milk which turns it sour; and if our beer be new and its fermentation not complete, lightning will so accelerate the process that it will turn the sugar which is not yet alcohol into acetic acid, and we shall have sour beer. Old beer and strong porter, the fermentation of which is more advanced, will be less affected, if at all.

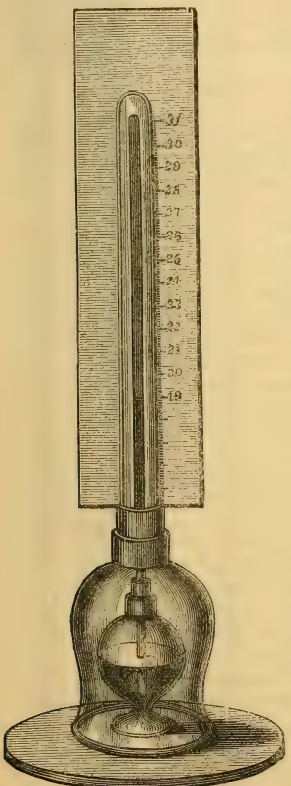
But lightning, in spite of its peril for us, is a beneficent agent in creation. It is one of the great sources of heat. It purifies the air by producing nitric acid* in it, and by agitating the air-currents.

* Nitric acid acts very powerfully in destroying noxious exhalations from putrid vegetable or animal matter. It is formed by the electric fluid chemically uniting the nitrogen and oxygen of the atmosphere.

A thunder-storm generally follows very dry weather in summer. The dry air being a non-conductor will not relieve the clouds of it, and they are at length discharged in a storm; whereas moist air or falling rain—a good conductor—carries the fluid silently, and by degrees, from the clouds into the earth.

THE BAROMETER.

Two Greek words—*βάρος*, a weight, and *μέτρον*, a measure—are enlisted to give the title to this most valuable instrument, which accurately demonstrates the variability of the pressure of the air. Mercury is about thirteen times heavier than water; consequently a column of mercury 1 in. square and about 30 in. in height will counterbalance a column of water 34 ft. high and 1 in. square at the base, or both will hold in equipoise a column of air of its natural height from the earth, or that aërial mixture which is supposed to be included within a distance of 45 miles of the earth's surface—*i.e.*, starting from the level of the sea.



The Barometer in the Vacuum of an Air-Pump.

The specific gravity of air is taken as unity or one, and it is the standard with which the density of all gaseous bodies is compared. Air at 30 Bar. and 32° Fahr. is 769·4 lighter than water, and 10,462 times less heavy than mercury.

A barometer, for rough purposes, is soon made. A clean, dry tube of stout glass, called barometer-tube, is hermetically sealed at one end; pure mercury is then poured in until the tube is filled within one inch of the open end; the thumb is now held tightly over the latter, and the air included in the small space already alluded to is slowly passed up and down the tube, in order to collect all the smaller bubbles of air which adhere to the inside of the glass tube. The tube, filled with mercury, is left standing upright, and is gently tapped (say daily for a week), in order to assist the escape of any bubbles of air. It is then inverted in a basin of clean mercury, and, supposing the tube to be 36 in. in length, the mercury may fall to 30 in., and the space between 30 in. and 36 in. is called the Torricellian vacuum.

The barometer thus made, if placed under the receiver of an air-pump, indicates, by the falling of the mercury, the amount of vacuum procurable by any pump that the operator may wish to test; but there

is always a fractional portion left behind, however excellent the air-pump may be. A pump that will remove 329 volumes out of 330 may be regarded as a very good one.

The more refined instruments required for meteorological purposes are made in the same manner, with the additional precaution of boiling the quicksilver in the tube, so as to get rid of the last bubbles of air. It is this which renders them more costly, as many tubes are sometimes broken in the process of boiling. There are many good barometer-makers in London.

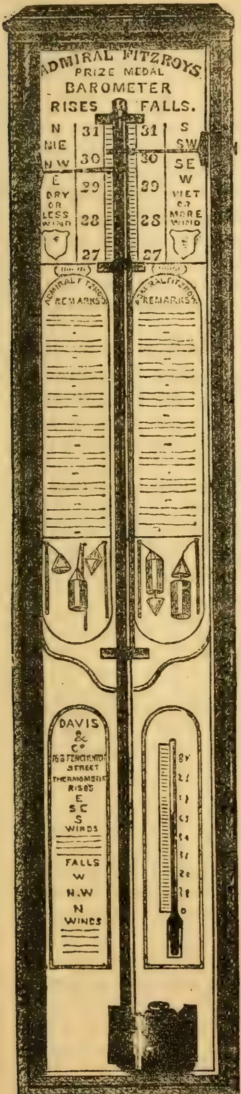
The annexed figure represents a refined instrument, made by Negretti and Zambra, who give the following instructions :—

A Standard Barometer, on Fortin's principle, reading from an ivory point in the cistern, to insure a constant level—with mercury boiled in the tube. The barometer-tube, which is $\frac{4}{10}$ of an inch diameter, is enclosed and protected by a tube of brass extending throughout its whole length ; the upper portion of the brass tube has two longitudinal openings opposite each other ; on one side of the front opening is the barometrical scale of English inches, divided to show, by means of a vernier, $\frac{1}{500}$ of an inch ; on the opposite side is sometimes divided a scale of French millimetres, reading also by a vernier to $\frac{1}{10}$ of a millimetre ; the reservoir or cistern of the barometer is of glass, closed at bottom by means of a leather bag, acted upon by a thumb-screw passing through the bottom of an arrangement of brass-work, by which it is protected. A delicate thermometer is attached to the brass tube.

A Standard Barometer.

Directions for fixing the Barometer.—Having determined upon the position in which to place the instrument, fix the mahogany board as nearly vertical as possible ; and ascertain if the barometer is perfect, and free from air, in the following manner :—Lower the screw at the bottom of cistern three or four turns, that the mercury in the tube, when held upright, may fall two or three inches from the top ; then slightly incline the instrument from the vertical position, and if the mercury in striking the top elicit a sharp tap the instrument is quite perfect. If the tap be dull, or not heard at all, there is air above the mercury, which must be driven into the cistern by *inverting the instrument, and gently tapping it with the hand.* Supposing the barometer to be in perfect condition, it is next suspended on the brass bracket, its cistern passing through the ring at bottom of the mahogany board, and allowed to find its vertical position, after which it is firmly clasped by means of the three thumb-screws.

Before making an observation, the mercury in the cistern must be raised or lowered, by means of the thumb-screw, until the ivory point and



Davis's Prize Medal Barometer and Weather Guide.

its reflected image are just in contact; the vernier is then moved by means of the milled head, until its lower termination just excludes the light from the top of the mercurial column; the reading is then taken by means of the scale on the limb and the vernier.

A very excellent and moderate-priced instrument is that made by Davis and Co., 163, Fenchurch Street. (*See cut.*)

Changes in the weather are indicated by the barometer, or weather-glass, which was invented by Torricelli, a pupil of Galileo, in 1643.

The principle by which it is made to indicate changes of weather is by measuring the weight of air. When the atmosphere is filled with vapour the air is *lighter* than usual, and the column of mercury in the barometer stands low. When the air is dry and free from vapour it is heavy and the mercury stands high.

To sailors the barometer is of the highest value; it forewarns them of wind, rain, and storms, and thus enables them to prepare their vessel to meet it. An unusual and sudden fall in the barometer has been found frequently to precede a hurricane.

The barometer is highest of all during a protracted frost, and rises with a north-east wind, and when the air is very dry. The barometer falls very low in a thaw; it falls also when the wind comes from the moist quarters of the south and west. When the barometer stands above 30°, no rain may be expected, the air is too dry for it. When the barometer stands very low indeed, short heavy showers and sudden squalls from the west may be expected.

As we have said, the sudden falling of the barometer denotes gales of wind, or, if the weather be very hot, thunder. In frosty weather the fall of the barometer foretells an approaching thaw. The barometer sinks lowest of all for wind and rain together. In winter the rise of the barometer foretells frost.

During frosty weather the rise presages snow. If in wet weather the barometer rises suddenly, the fine weather will not last. If the mercury fluctuates, expect changeable weather. In short, its upward motion signifies fine weather; its downward, wet or windy weather.

The barometer is highest in May, August, June, March, September, and April.

The mercury is rising when the top of the column is convex, that is, higher in the middle than at the sides; it is falling when the top of the column is concave, that is, when it is hollow in the middle and higher at the sides.

The convex form is caused by the whole column not being able to rise together on account of the capillary attraction of the glass tube, which delays the part of the mercury which touches it, while the middle part is rising. The same cause—the capillary attraction of the sides of the glass tube—delays the fall of the sides of the column, and the centre sinks faster than the outside, and gives the column a concave shape at the top.

There are many natural prognostics of coming fine or foul weather. A red sunset with a tint of purple in it is a harbinger of a fair morrow. For when the air is dry it refracts the red or heat-making rays, and as dry air is not perfectly transparent they are again reflected in the horizon.

A red *sunrise*, on the contrary, forebodes wet.

A yellow or coppery sunset foretells rain. The yellow colour shows that the vapours of the air are already condensed into clouds. The rays of light meet with more resistance from condensed vapour, consequently those which are more refracted than the red—*i.e.*, the yellow—are bent down to the eye. Moist air is more transparent than dry, and allows yellow rays, which have less momentum than red, to pass through it.

A grey sunrise is the harbinger of a fine day, for the air must be comparatively clear and free from moisture to let all the three coloured rays pass together, with a slight degree of intensity, so as to produce white light—for grey is only a modification of white. The old proverb truly says:

"Evening red and morning grey
Will set the traveller on his way;
But evening grey and morning red
Will bring down rain upon his head."

A morning rainbow also presages wet, because it must necessarily be in the west, for it is always opposite the sun, which rises in the east; now rain clouds in the west almost always in this country bring bad weather. The old proverb is well known:

"A rainbow in the morning is the shepherd's warning;
A rainbow at night is the shepherd's delight."

The rainbow at night is in the east because the sun is in the west, and as it shows that the rain clouds (if they have been driven from the west) are leaving us, it harbingers fine weather. If the wind be easterly, however, neither can be relied on.

A haze round the sun and a halo round the moon both foretell rain, for they are each caused by very fine rain suspended in the upper regions of the air, which will be sure to fall at last. The larger the halo, the sooner rain may be expected, because the clouds are nearer. Flowers also give out peculiarly strong and sweet odours before rain, chiefly because the vapour in the air prevents their perfume from ascending.

Swallows fly low before rain, because the insects on which they feed have descended from the cold regions of the air to the warmer air near the earth.

Seagulls come to land before stormy weather, because the fish on which they feed leave the surface of the sea, and they are driven for food to the worms and larvæ which in such weather come out of the ground.

The Stormy Petrels* on the contrary go out to sea and run along the top of the waves, because their food (which consists of insects) is at such times to be found on the surface of the water; and their presence invariably predicts a storm.

"The different tribes of wading birds always migrate," says Sir Humphry Davy, "when rain is about to take place; and I remember once in Italy, having been long waiting in the end of March for the arrival of the double snipe in the Campagna of Rome, a great flight appeared on the 3rd of April, and the day after heavy rain set in which greatly interfered with my sport." Sir Humphry goes on by observing that many popular superstitions are owing to the same causes. "For anglers in spring," he says, "it is always unlucky to see single magpies, but two may be always regarded as a favourable omen; and the reason is that in cold and stormy weather one magpie alone leaves the nest in search of food, the other remaining sitting upon the eggs or the young ones; but when two go out together it is only when the weather is warm and mild and favourable for fishing."

Certain winds also influence the weather.

Wind is air set in motion by heat or cold. The air always seeks to preserve an equilibrium; therefore when hot air ascends, as it always does, cold air rushes into its place. Our highest winds are generally in December and January; March and November come next. The wind is stillest in August and September. High winds are caused in the cold months by the contrast between our temperature and that of the torrid zone; for the greater the contrast of cold and heat, the more violently will the air rush in to restore the equilibrium.

In summer when our climate is nearer in heat to that of the tropics, the air rushes to us with less force and velocity.

This tendency of the air to preserve an equilibrium is one of the wisest laws of creation, for by it the northern regions are warmed by the hot air from the torrid zone, and the torrid zone air is cooled by the cold air from the poles. In addition to this, the air from the tropics, where great portions of land are covered with vast forests, is full of oxygen, while in the temperate and polar regions, fires and congregated human beings fill the air with carbonic acid. The mingling of the hot and cold atmospheres is consequently beneficial to both. The polar air currents carry carbonic acid to the plants of the torrid zone, while the equatorial currents carry oxygen to the animals of the other zones.

The west winds coming across the Atlantic are laden with vapour, and on meeting with the least chill fall in rain. East winds cross the cold plains of the north of Europe, and as they pass chiefly over land do not absorb much water; they are consequently very dry and absorb moisture from our air and clouds.

The north wind is generally cold, keen, and dry, because it comes from

* *Petrelli*, or little Peters, so called from the manner in which they *walk* or run on the top of the waves.

the Arctic Regions, over mountains of snow and plains of ice, and being warmed by the heat of our island instantly *absorbs* all the moisture it can find. The north-east wind from the same causes is also a dry one. South winds are warm because they come to us over the scorching sands of Africa, and consequently imbibe water in large quantities as they cross the Mediterranean and English Channel; as soon as they reach our colder climate they are condensed—can no longer hold their vapour in solution—and it falls as rain.

Sea breezes are very salubrious, both on account of the constituent elements of the sea air, and because they are not laden with noxious vapours; this is especially the case in the morning, when the cool air from the sea, which has never been heated as the land breeze has, creeps inland to restore the equilibrium of the air by pressing the light hot air upwards.

Land breezes are coolest of an evening because the surface of the land cools down after sunset more quickly than the surface of the sea, therefore the air from the land feels cooler than that from the sea. Islands are warmer in winter than continents, because the warmth of the sea air mitigates the cold of the land air.

DEW is condensed vapour from the air. It is condensed by coming in contact with bodies colder than itself. In summer there is much dew because the hot earth radiates or throws off heat freely and the air does not; consequently after sunset the earth is often many degrees colder than the air, and the warm vapour of the air which touches it is chilled and condensed into dew. Clouds arrest the radiation of heat from the earth, consequently on dull cloudy evenings and nights there is no dew. In consequence of the clouds preventing the radiation of heat from the earth, the surface of the ground retains its warmth and a cloudy night becomes closer and hotter than a fine clear one. Any covering prevents the radiation of heat from the earth, therefore if an awning be spread out of doors there will be little or no dew under it, even if it should be open at the sides. It is a knowledge of this principle which enables us to protect trees from the frost. *Any* covering prevents the radiation of heat from the tree; and if trees are not cooled down by radiation the air-vapour will not be frozen when it comes in contact with them. A thin covering of muslin is therefore sufficient to prevent them from being struck by the frost. But the bass or canvas usually employed to cover fruit trees is always drenched with dew itself, because it radiates heat both upwards and downwards, and in consequence is so cooled that it readily condenses the air-vapour into dew.

Leaves of plants and grass radiate heat very freely, and by doing so condense the vapour of the air into dew very easily; thus they supply their great need of moisture in dry weather.

Polished metal and smooth stones do not radiate heat well, and consequently scarcely get any dew by condensing the air-vapour. Thus only the things which require dew, make it.

Radiation is carried on very rapidly on bright moonlight nights; dew is consequently largely deposited on young plants and trees, and thus their growth is promoted.

Evening dew is always laden with exhalations from the earth which are injurious to health; it should therefore be avoided.

There are certain small weather-toys which admirably supply the place of the barometer where the expense of the latter prevents purchasing it. The capuchin is one; in this the monk's cowl is on when rain is coming, but is taken off when it is fine. This is caused by the catgut which is attached to it; being shortened by moisture it pulls the cowl up. In dry weather the string expands and the cowl falls by its own weight. In the other toys, where a man and a lady, or a knight and a jester, etc., come out alternately, the same principle acts; the moist catgut sending out the man, or knight, as it may be.

MAGNETISM.

The magnetic or black oxide of iron, sometimes called the *lead*-stone or loadstone, is estimated as one of the most valuable ores of iron, because it enjoys the property, when freely suspended, of pointing to the north; and it does this by virtue of an inherent property which belongs to it, called magnetism.

The Shepherd discovering the Magnetic Stone on Mount Ida with the Iron of his Crook.

The loadstone occurs native, and crystallizes in cubes, and is said to have been discovered by a shepherd on Mount Ida, who first noticed that the iron of his crook was attracted by it.

The magnet was not only called *magnes*, but "lapis Heracleus," from Heraclea, a city of Magnesia, a part of ancient Lydia, in Greece. It is

also called *lapis nauticus*, because of its use in navigation; and *siderites*, because the mineral attracts iron, which the Greeks called *σίδηρος*.

"The earliest mention in English records of the primitive mariner's compass is that by Alexander Neckham, who describes the same in his 'Treatise on Things pertaining to Ships.' Neckham was born at St. Alban's in 1157. A translation of his works from the Latin, was published in 1866. In the reign of Edward III., the magnet was known by the name of the *sail-stone* or *adamant*, and the compass was called the sailing-needle or dial; it is long after this period before we find the word compass. A ship called the *Plenty* sailed from Hull in 1388, and we find that she was steered by the sailing-stone. In 1345, another entry occurs of one of the king's ships, called the *George*, bringing over sixteen horologes from Sluys, and that money had been paid at the same place for twelve stones, called adamants or sail-stones, for repairing divers instruments pertaining to a ship."

Fine large pieces of loadstone are usually mounted in handsome brass or silver boxes, and were highly prized in the reign of King Charles II., when the Royal Society of England began to exert itself in the acquisition of scientific knowledge.

When examined with a magnetic needle, the mineral is found to have two points where the magnetic virtue exists in the greatest intensity: these are called poles, and are connected with the pieces of soft iron which protrude from the case containing the loadstone; they take off the friction and wear and tear of the mineral, whilst all cutting of the stone, in order to obtain a hollow space between the two poles, as in an ordinary horseshoe magnet, is avoided. The magnetism from the loadstone is easily conferred upon and retained by hardened steel.

It is only necessary to rub the steel or drag the loadstone round in one direction, taking care to put the pole N of the latter on the end of the steel bar marked S. An assemblage of steel plates in the form of an elongated horseshoe, when carefully magnetized and fixed together, constitutes a kind of magnetic battery having greatly increased powers.

Every housemother should possess a small magnet. In case of a morsel of needle or any steel dust getting into the eye, a magnet held to it will draw the offending substance out. A niece of the writer broke a large carpet needle into her foot. A surgeon was called in; he endeavoured to extract it, cut the foot deeply, but could not succeed in reaching the needle. Some days afterwards, at the suggestion of a friend's nurse, she tried holding a strong horse-shoe magnet to it, drawing it backwards and forwards over the place till the needle, obeying the attraction, appeared on the surface. She then squeezed it upwards, and passing another needle through the eye, drew it out.

THE HOUSE-MOTHER.

The house taken and furnished, the duties of the housewife or—we prefer giving her the expressive name employed by our German cousins, —the HOUSE-MOTHER—begin, and first, perhaps, in her list of many duties comes *feeding the family*. In order to do this judiciously and economically, she should know everything about the articles on which we feed, —their powers of sustaining life and health—the mode of using and preserving them, and their price. We give, therefore, a brief summary of the chief food used in English families, and some hints respecting the provisions for the larder found in the colonies. This book does not however pretend to be a cookery book ; for instructions in that art the reader is referred to Warne's " Model Cookery Books," which range from the first-class volume, price 7*s*. 6*d*., to the poor house-mother's guide at a penny.

The house-mother has duties separate from those of the cook. One of these is a knowledge of the nature and character of the food which the latter prepares. We offer her in the following pages some guidance in this direction ; and also we insert some few receipts which from their excellence, and their being chiefly original and not to be met with elsewhere, we think may be useful. They will be found at the end of the description of the article of food to which they refer.

FOOD.

The use of food is to repair the waste daily and hourly going on in our bodies, and to enable us to execute the work for which the body was designed ; also, as we have shown in the first pages of Domestic Science, to keep the lamp of life burning by supporting the animal heat.

To keep a man living and able to work he will require daily five ounces of *nitrogenous* or *flesh-forming* food, and ten ounces of *calorific* matter or carbon, for *heat-giving* or breathing. Women and schoolboys require two and a half ounces of flesh-formers, and about three-fourths of the man's amount of carbon, or heat-givers.*

" This large quantity of starch or fat is required by a full-grown man daily, in order that he may continue to breathe, and yet retain the weight of his body undiminished.

" That all bodily movement is attended by waste of the bodily substance is a received opinion. But whether such movement is or is not its true cause, the waste itself is certain. An animal when fasting will lose from a fourteenth to a twelfth of its whole weight in twenty-four hours. This loss does not fall altogether upon the fat"—which supplies the animal heat—" but extends also in part to the tissues and general substance of the body. It is so great that the whole blood is unable altogether to replace it. Scarcely, therefore, is the stomach of an animal empty, when it begins already to feed upon itself."

The food required by the body consists of gluten, fibrin, albumen, starch, fat, sugar, and saline matters.

---

* On the authority of the South Kensington Museum.

Gluten will be readily detected in the dough of bread if it be placed on a sieve and turned about by the hand under a stream of water poured from a jug on it. The water at first passes through milky in appearance; at last there will remain at the bottom of the sieve a white sticky substance resembling bird-lime. This matter from its glutinous nature has been called "gluten."

If the milky water be allowed to stand, a white powder will sink as a sediment in it, which is wheaten starch.

Gluten contains nitrogen, the kind of air or gas which forms the greater part of the atmosphere. The fibrin of meat, and the albumen or white of an egg, also contain nitrogen nearly in the same proportion as gluten. In these three similar substances, therefore, the nutritive or flesh-forming parts of our food are chiefly found. We must observe here, that albumen *in plants* is not the same as the albumen which is the white of an egg. It is the white inner part of the seed on which the plants feed, as the chicken does on the albumen in the egg. Albumen, though different in appearance and sensible properties from gluten and fibrin has, as we have just said, a close chemical relation to both and serves nearly the same purpose in feeding animals. Gluten, fibrin, and albumen are all alike *nutritive* and flesh-forming.

Next in order come the heat-givers, or those substances which by keeping up the internal combustion always going on within, enable us to breathe and live—they are the fats and oils, sugars and starch. Human fat feeds the animal heat in combination with the oxygen of the air. It (human fat) consists of carbon, hydrogen, and oxygen, and is transformed into carbonic acid and water by the oxygen in the air we breathe. This oxygen taken into the blood circulates through our bodies, unites with the carbon and hydrogen of the fat, and changes it into carbonic acid and water, to be breathed off again through the lungs.

Now starch and sugar will take the place of the animal fat, and thus prevent its diminution. They will be breathed away instead of the fat of the animal itself. Ardent spirits, which consist of four parts of carbon, six of hydrogen, and two of oxygen, have the same power of supplying carbonic acid gas for breathing. Starch consists of half its weight in carbon, and hydrogen and oxygen in the proportions which form water—*i.e.*, eight parts of oxygen to one part of hydrogen. It produces when *oxidized* (that is, united with oxygen) in the system of man, muscular force and animal heat, but it is not either a flesh or muscle former.

Arrowroot, which is a starch, cannot therefore form alone the food of man, who on such a diet would die of slow starvation.

No vegetable production will preserve life unless starch and *gluten* be united in it.

Wheaten bread will support life, but it lacks *fat*, required for repairing the waste of animal fat, and to help digestion; and we consequently eat butter with it. We make tart and pie crusts with butter, lard, or dripping, for the same reason, wheaten flour being deficient in fat; in fact to most vegetables we require to add fat.

Woody fibre will be always found amongst the constituents of vegetable food; it passes through the animal undigested.

The following table of flesh-formers, each sufficing for the daily food of a man, is given from the Food Gallery of the South Kensington

Museum. The various vegetable substances contain the same supply of nitrogen in the varying quantities,

2lbs.	1 oz.	of Flour.	20lbs.	13oz.	Potatoes.
2	6	of Barley-meal.	31	4	Carrots.
1	13	Oatmeal.*	15	10	Parsnips.
2	9	Maize.	17	13	Turnips.
2	3	of Rye.	10	6	of Cabbage.
4	13	Rice.	3	13	Bread.
3	10	Buckwheat.	1	11	Tea—dry.
1	3	of Lentils.	2	1	Coffee—dry.
1	5	of dry Peas.	1	8	Cocoa-nibs.
1	5	dry Beans.			

"All parts of the body," says Professor Johnston, "are endowed with the power of selecting from the universally nourishing blood the chemical compounds which are specially required for the formation of their own substance, or the discharge of their special functions. Thus the bones specially select and appropriate phosphate of lime, while the muscles take phosphate of magnesia and phosphate of potash. The cartilages build in soda in preference to potash. The bones and teeth specially extract fluorine. Silica is almost monopolized by the hair, skin, and nails of man. . . . . Iron abounds chiefly in the colouring matter of the blood, in the black pigment of the eye, and in the hair. Sulphur exists largely in the hair, and phosphorus in the brain. Thus to each part of the body certain chemical substances seem to be most specially appropriated, and to each part a peculiar and special power has been given of selecting out of the common storehouse those materials which suit it best to work withal."

These materials are supplied in our food, and care should be taken by the housewife that bad cooking and injudicious arrangements may not cause the needful substances to be wanting from the food supplied.

We shall now endeavour to guide her judgment in the choice and preservation of food, commencing with a little information respecting the staff of life—our daily bread.

Bread, and the Grains used for making it.

The various kinds of flour used for ordinary English bread are—

Wheat Flour, Oatmeal, Barley-meal, Indian-meal.

Wheat-flour is sold by millers, and all of these grains are sold at corn-chandlers.

Wheat.

Constituent parts—1lb. *contains*—

	Oz.	Grs.		Oz.	Grs.
Water	2	106	Gum	0	119
Gluten	2	21	Fat	0	84
Albumen	0	126	Woody fibre . . .	0	119
Starch	9	242	Ashes	0	112
Sugar	0	385	Carbon	7	0

* It will be here seen how nutritious oatmeal is.

21 ounces of wheat are required to yield 1 lb. of flour.

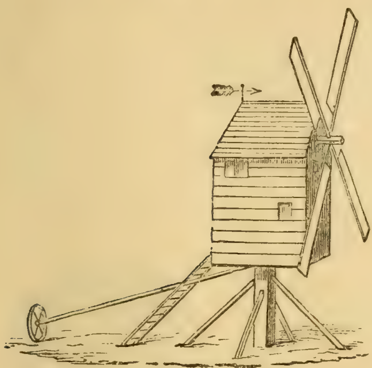
More than 100 varieties of wheat are cultivated in Great Britain and elsewhere.

Lammas. Essex. Spalding. Chiddam.

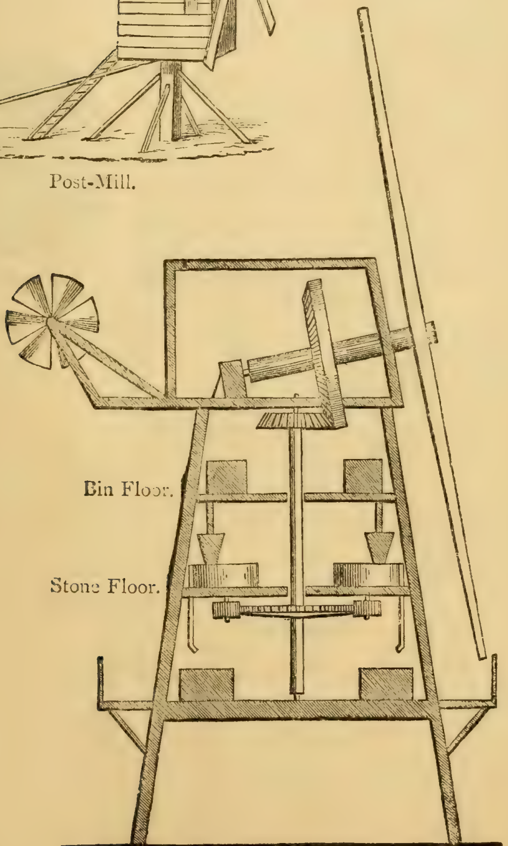
There are many kinds of foreign wheat.

Flour of every kind consists of two classes of substances—one *nitrogenized,* the other *non-nitrogenized.* It also contains mineral substances.

The gluten is the substance of most importance in flour, as it contains, in its crude state, most of the other nitrogenized substances—viz., fibrine, mucine or caseine, and oil. The greater part of the oil is con-



Post-Mill.



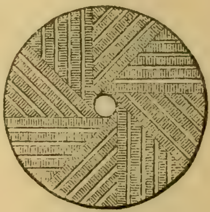
Section of a Mill turning two sets of Mill-stones.

tained in the bran, or husk, as are also the phosphates. The nitrogenized substances—pure gluten, vegetable fibrin, caseine, and oil, serve to form in the human body flesh or muscle through the agency of the blood into which they first enter; the starch, sugar, and gum are used for forming fat and carrying on respiration.

It will be seen, by comparison with the following tables, that the nitrogenized, or flesh-forming substances, are in larger proportion in wheat than in any other grain, consequently wheaten bread is the most economical in the end.

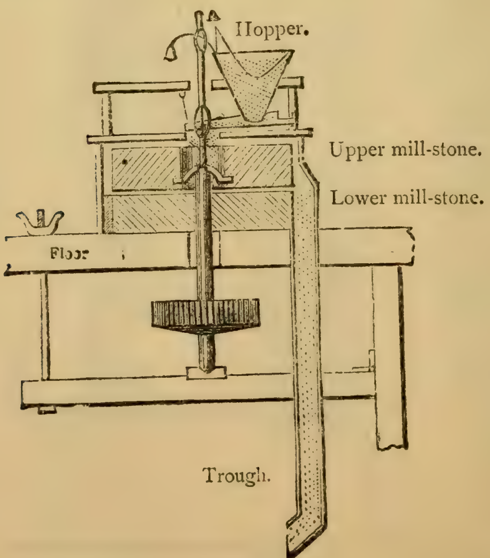
Before grinding, several sorts of wheat are mixed together, as the mixture makes better bread than any single kind alone. The process of mixing is called "mealing."

After the wheat is mixed, it is carefully winnowed from the dust, and then descends through a hopper (A) to the space between two mill-stones (B). These are about four or five feet in diameter, and are made of a very hard French stone—called French burr-stone.



Mill-stone.

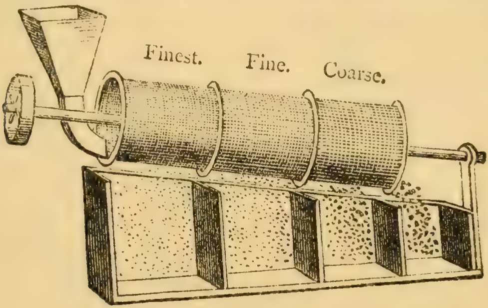
The burr-stones are not often brought to this country much larger than a man's hat—a number of them are, therefore, carefully cemented together with a very strong cement, and bound with iron hoops to form one mill-stone. The method that is employed in France to split the burr-stones to the requisite thickness, is rather singular. Circular indentations are made round the blocks,



at proper distances, and then wedges of willow that have been dried in an oven are driven into the indentations with a mallet. When these wedges have been sunk to a proper depth they are moistened with water; and, after a few hours, the several stones that have been marked out are found to be perfectly separated. The surfaces of the stones are rough or grooved, and the lower one being fixed, the upper one revolves rapidly—more than a hundred times in a minute.

It is necessary to keep the stones a little distance apart, for if they touched they would grow very hot. This is effected by a strong spindle being put through a small hole in the lower stone, which turns the upper mill-stone. By raising or lowering the spindle the upper stone is raised or lowered. The centrifugal force drives the flour from the centre to the circumference, where it falls into a box. The upper stone is slightly concave, therefore the broken grain can gradually find its way outwards, being ground in its passage. A blast of cold air is directed on the stone to keep it cool.

The flour descends through a spout into a bin below, after which it is "dressed"—*i.e.*, sifted through a sieve, which varies in fineness.



Finest flour. Fine. Coarse. Bran.

A spindle through the middle of the sieve, has brushes fastened to it. When the flour is in, the brushes revolve swiftly, and rub the flour through the sieve—the bran falling out at the end. By an exhausting or pumping apparatus, the loose flour dispersed in the air by the blast is collected and saved from waste.

A quarter of wheat, when ground, produces—

Flour.	Biscuit or fine middlings.	Toppings or specks.
Best pollard.	Fine pollard.	Bran and coarse pollard.

The pollards are sold for feeding pigs and poultry, the bran for horses and cattle; three kinds of flour remain for the bakehouse—*firsts*, for fine wheaten bread; *seconds* for household bread; *thirds*, for brown bread.

The flour, when ground, is placed in sacks; each sack contains five bushels, that is, 280 lbs. The bushel is divided again into four pecks. In some English counties BREAD is measured by the gallon—in Hants, for example. In London, and generally in England, by the 4 lb., or *quartern* loaf.

American flour is much cheaper than English; and, when good, is

very excellent—it is sold in barrels.* *Seconds* are quite good enough for ordinary bread; *firsts* are required for pastry. The whole meal should be used for making bread, as the phosphates of wheat necessary for forming bone are contained in it. It is said, on high medical authority, that the decay in the teeth amongst young people, so much more prevalent than it was a century ago, proceeds from our never eating anything but the finest flour. A mixture of bran also assists digestion.

The whole meal is obtained by simply grinding the grain without sifting it: it is not only best for nourishment, but would effect a great saving if used.

Flour is fearfully adulterated, the usual substances used for the purpose being pea and bean meal, potato-flour, plaster of Paris, bone-dust and alum. In purchasing flour, it is wise to take up a handful and make a ball of it. If it holds together well for a little while the flour is probably pure. Plaster of Paris may be detected by its great weight. Observe in your toast whether there is any scent of bean or pea, while the toast is hot. Nitric and muriatic acid will also test the purity of flour; if it is not adulterated nitric acid will turn it orange colour, and muriatic acid will change it to a deep violet colour.

Oats.

Constituent parts—1lb. *oatmeal contains*—

	Oz.	Grs.		Oz.	Grs.
Water	2	78	Fat or oil	0	397
Flesh-formers . .	2	316	Woody fibre . . .	2	6
Starch	6	153	Ashes	0	210
Sugar	0	378	*Carbon*	6	348
Gum	0	210			

Oats grow in England, but are much finer and better when grown in Scotland. In the husk, they are used chiefly as food for horses. The potato-oat has been long in cultivation. It yields the very best quality known to English agriculture. The husk removed, the grain is called groats, and is used for making gruel. Ground to a flour, it is called oatmeal. Oatmeal is the chief food of the Scottish peasantry, and it is nourishing and excellent, both when made into porridge and cakes; it cannot be made into bread. The outer husk, unlike that of wheat, is poor in albuminoid matters, so that oatmeal is better than the whole oat. Oatmeal is rich in fat.

* Dr. Poleck has instituted a series of researches with the view of ascertaining the cause of the difference exhibited by flour preserved in casks, and that kept in bags, the former of which often obtains a peculiar smell. He found that the gluten of flour exhibiting that peculiar smell had been, in a great measure, converted into a soluble modification, whereby the flour had lost the capability of being converted into a good dough, the flour also having assumed a sour reaction. He ascribes the cause of this change to want of a sufficient circulation of air through the mass of the flour kept in casks, the innermost flour in which was most sour and gave off the peculiar, somewhat mouldy smell. It was also found that with this change in the flour coincides an increase of the albuminous compounds therein soluble in water.—*Chemical News.*

A bushel of oats weighs 39 to 41 lbs. They are sold generally, however, as oatmeal, on account of the great waste occasioned by the thick husk in grinding. Oatmeal is sold by the cwt. or ton. Oats are the best food for horses. Oatmeal porridge is an excellent food for children—a good breakfast for any one

Potato Oat.

Barbachlaw Oat,
a hardy and prolific sort.

Barley.

Constituent parts—1lb. *contains*—

	Oz.	Grs.		Oz.	Grs.
Water	2	106	Fat	0	20
Gluten	2	22	Fibre	2	50
Starch	7	297	Ashes	0	293
Sugar	0	265	*Carbon*	6	0
Gum	0	258			

Barley is used in its natural state for feeding poultry, and constitutes the material for making malt. When threshed, the grain is called Scotch barley; further prepared, pearl-barley; carefully ground, patent barley; or, less prepared, barley-meal, which makes agreeable cakes.

The chief value of barley, however, is that it furnishes the malt for our beers.

Malt is procured from barley in the following manner:—

The maltster moistens his barley and spreads it on the floor of a dark room to heat and sprout. When the germ is about to burst from its envelope, he stops the growth by drying the grain gently on the floor of his kiln. It is then called malted barley, and has a sweet taste. The starch of the barley is changed into soluble grape-sugar; the gluten into a white soluble substance, called diastase.

The maltster has only taken advantage of the chemistry of nature with respect to a growing plant. The grain consists of two principal substances—starch and gluten. When moistened by the rain and dew, the grain begins to sprout; the starch and gluten are intended to feed the young plant, but they cannot be dissolved in water, so in their natural state they cannot pass out of the body of the seed to nourish the growing germ. Therefore, as the sprouting proceeds, a chemical change in them has been wonderfully ordained. This change takes place at the bottom of the germ, exactly where the starch and gluten are needed for food. The gluten is changed into *diastase* (among other products); the starch again is changed by the *diastase* mixing with it, into grape-sugar, which is soluble in the sap, and therefore can be carried up as food for the young plant. We all know that sprouting corn is sweet.

The maltster retains the germ just in this chemical condition, and uses for beer the substance which nature provides for the growing plant.

One pound of *diastase* is sufficient to change a thousand pounds of starch into grape-sugar.

The malt is ready, when thus prepared, for the mash-tub.

By a further and very familiar chemical process it is turned into beer.

Barley is deficient in crude gluten.

Barley-meal makes more fat and less muscle than Wheat-flour.

Maize or Indian-Corn.

Constituent parts—1lb. *contains*—

	Oz.	Grs.		Oz.	Grs.
Water	2	105	Fat or Oil . . .	1	101
Gluten	1	402	Woody fibre . . .	0	350
Starch	9	262	Ashes	0	70
Sugar and Gum .	0	21	*Carbon*	$5\frac{3}{4}$	0

Indian-corn meal is made from Maize, or Indian Corn, and is sold as polenta, and when coarsely bruised as hominy. Polenta makes very nice and nutritious bread, at a much lower price than Wheat-flour. The taste is very sweet and peculiar. It has less gluten than wheat and more oil, therefore it makes more fat but less muscle.

Many very nice cakes may be made from Indian-corn.

The method of making bread from Indian-corn (in conjunction with wheat-flour) is given in Warne's "Model Cookery Book."

Indian-meal is very nutritious.

Rye.

Used for bread in Sweden and Russia.

Constituent parts—1 lb. *contains*—

	Oz.	Grs.		Oz.	Grs.
Water	2	35	Gum	0	371
Gluten	1	318	Sugar	0	262
Albumen	0	213	Fat	0	66
Starch	8	79	Ashes	0	122

Rye makes a light spongy bread like wheat, and it is very nearly as nutritive as wheaten bread. Rye bread possesses one valuable quality, it retains its moisture and freshness for a long time, and can be kept for months without becoming hard, dry, and unpalatable. This arises from peculiar properties possessed by its gluten. The Swedes are enabled therefore to keep rye-cakes strung on rods under the roof of their dwellings till required.

Buckwheat.

Valuable for its late sowing, rapid growth, and cheap cultivation.

Constituent parts—1 lb. *contains*—

	Oz.	Grs.		Oz.	Grs.
Water	2	118	Fat	0	70
Gluten	1	165	Woody fibre . . .	3	114
Starch	8	0	Mineral matter . .	0	126
Gum	0	140			

Buckwheat flour is nearly as nutritious as wheaten flour, and makes excellent cakes. They are eaten in the backwoods of America hot and spread with maple honey.

American Buckwheat Cakes.

One quart of buckwheat flour, one heaped-up dessert spoonful of Borwick's baking powder, a little salt. Enough water to make a batter.

Make a batter of the above ingredients ; put a *very* little dripping or butter in a frying-pan, *hardly* greasing the pan. Drop in portions of the batter, and fry. When the cakes look full of little holes turn them. Send them to table very hot. They are eaten with butter or golden syrup.

Half the above quantity suffices for a small family.

Wheaten Bread.

If flour be mixed with sufficient water, the particles will cohere and form a smooth elastic substance called dough. When a little yeast is added to the flour before, or as it is being mixed with the water, and the dough is placed for an hour or two near the fire, the warmth will cause the yeast to make it ferment, or *rise*, as cooks say—that is, it will swell up. This fermentation is the consequence of the peculiar action which yeast exercises over moist flour. It first changes a part of the starch which is in the flour into sugar, and then turns this sugar into alcohol and carbonic acid, in exactly the same way as it does in the worts of the brewer or spirit distiller. Therefore, when the poorer classes objected to unfermented bread as being "without its gin," they were scientifically correct, although the greater part of the alcohol escapes during the baking of the loaf, and is actually lost in the oven. The carbonic acid gas, unable to make its way out through the glutinous dough, forms large bubbles within it and makes it swell, till the heat of the oven at last kills the yeast plant, when the fermentation suddenly ceases ; this takes place when the heat reaches the boiling-point—212° ; till then heat assists the fermentation.

New bread is very soft and pleasant, though from its spongy nature it is thought indigestible. In a day or two it becomes stale and will crumble. It can be made as fresh as ever again, however, by just dipping it in water and exposing it again to the heat of an oven, or treating it in a closely covered tin. The same effect is produced without wetting the bread, if the heat to which it is subjected is at 212°.

The bread we eat is nearly *one-half* water, for the flour contains water naturally, and absorbs much more in its conversion into bread. One hundred pounds of wheaten flour take up fifty pounds weight of water, and yield one hundred and fifty pounds of bread. The water does not evaporate from the bread in the oven and the air, as much as we might expect, because the gluten, or flour, is difficult to dry, and retains the water ; part of the starch is converted into gum, and also holds it, and the crust of the loaf, which is dry and thick, retains the moisture within it. Wheaten bread contains in due proportions—water, gluten, starch, sugar, and gum.

By making bread at home we save the weight of water used in making each loaf, a very considerable economy in a large family.

THE YEAST PLANT.

The yeast with which we raise our bread is a minute plant belonging to the division of the Conferva. It grows in certain substances—in the juice of ripe grapes, in the syrup of sugar-cane, in beer, etc. etc. "The minuteness of the yeast plant," says Professor Johnston in his admirable "Chemistry of Common Life," (to which we refer our readers for much valuable information), "the minuteness of the yeast plant, consisting in its simplest form of only a single cell, long prevented it from being generally regarded as a form of living matter. But the changes it undergoes in the fermenting tub, day by day, as shown by the microscope, prove it to be unquestionably a growing vegetable."*

"If we filter the juice of ripe grapes we obtain a clear transparent liquid. Within half an hour this liquid begins to grow first cloudy, and afterwards thick; to give off bubbles of gas or to ferment; and in three hours a greyish yellow layer of yeast has collected on its surface. In the heat of the fermentation the plants are produced by millions; a single cubic inch of such yeast, free from adhering water, containing 52,000,000 of the minute organisms."

Yeast has the power of changing sugar into alcohol or pure spirit, and of raising bread by fermentation.

Distillers do not wait for the natural appearance of the plant; they add a little existing yeast to the liquor as soon as it is ready for fermentation, because they know how swiftly this mysterious plant will grow and propagate itself. The making of yeast is one branch of business itself now. It is sold as dry yeast for the use of the private baker or brewer. The process is thus given in the "Chemistry of Common Life," vol. i. p. 86.

"Crushed rye is mashed with the proper quantity of barley-malt, and the wort when made cooled to the proper temperature. For every hundred pounds of the crushed grain, there are now added half a pound of carbonate of soda and six ounces of oil of vitriol (sulphuric acid) diluted with much water, and the wort is then brought into fermentation by the addition of yeast. From the strongly fermenting liquid the yeast is skimmed off and strained through a hair-sieve into cold water, through which it is allowed to settle. It is afterwards washed with one or two waters, and finally pressed in cloth-bags till it has the consistency of dough. It has a pleasant fruity smell, and in a cool place may be kept for two or three weeks. It then passes into a putrefying decomposition, acquires the *odour of decaying cheese*, and like decaying cheese, has now the property of changing sugar into *lactic acid*, instead of into alcohol as before. A hundred pounds of crushed grain will yield six to eight pounds of the pressed yeast. It is made largely at Rotterdam, and is imported thence to this country through Hull."

Many families prefer making their own yeast to buying the German or patent yeast. We give three receipts for so doing in the next page. Brewer's yeast is apt sometimes to be bitter—yeast from porter is always so; to prevent the bitterness spoiling the bread, it is well to put a red hot poker

---

* "Chemistry of Common Life," vol. i. p. 29.

for a minute or two into the yeast, or to throw in a few blades of grass which can afterwards be strained off, but except in the country or where the family brews at home, brewer's yeast is seldom used; the German and patent yeasts are used. The dried yeasts consist of the sporules of the yeast plant, freed from gas and moisture by filtering or evaporating away the fermented liquid. When required for making, this yeast is dissolved in lukewarm water. A common method of drying yeast is to dip twigs in the yeast and dry them in the air; or the yeast is stirred round with a whisk till it is thin, and then spread with a brush over a clean piece of board, and dried in the air. When it is dry more yeast is brushed over it, and it is again dried. This process is repeated till the yeast is a good thickness on the board. It may be kept on it, and cut off as required.

Both brewer's yeast and artificial yeasts must be kept in a cool cellar or any very cold place to preserve them good.

To make Yeast for Home Consumption. No. 1.

Time to boil, half an hour; to make, four days.

Two ounces of the best hops; four quarts of water; one pound of best flour; three pounds of good potatoes.

Monday.—Boil two ounces of hops in four quarts of water for half an hour; strain it, and let the liquor cool down to new milk warmth, then put in a small handful of salt, and half a pound of brown sugar; beat up one pound of flour with some of the liquor, and then mix all well together. Let it stand.

Wednesday.—Add three pounds of potatoes, boiled and mashed, and let it stand.

Thursday.—Strain it and bottle in seltzer-water bottles for use. It must be stirred frequently while it is making, and kept near the fire. Before using shake the bottle well. It will keep in a cool place for two months, and is better for keeping. It ought to ferment in the earthen bowl in which it is made.

Receipt No. 2.

Twenty minutes to boil; twelve hours to ferment.

Two ounces of hops; one gallon of water; two and a half or three pounds of flour; six or seven boiled potatoes; one pint of ale yeast.

Boil the hops in a gallon of water for twenty minutes; strain the water through a hair sieve upon the two and a half or three pounds of flour—it will grow lumpy, but that is of no consequence; stir it occasionally and bruise it with a wooden spoon, let it stand till cool, and then keep it close to the fire all night. The next day fill a wide-covered stone jar with it; then add six or seven boiled potatoes mashed, and a pint of ale yeast to it (taking a pint out of the jar before you put the potatoes and barm in). Stir it well up and let it stand till the next day; then bottle it for use.

Receipt No. 3.

One pound of flour; quarter of a pound of yeast; a little salt; two gallons of water. Boil for one hour. When milk-warm, bottle and cork well. It is fit for use in twenty-four hours.

Yeast may be preserved by mixing it while yet moist with powdered sugar. The yeast ought not to contain too much water, and there should be enough sugar added to make a thick syrup of the whole. A deficiency in the quantity of sugar, and an abundance of water, are likely to bring about a fermentation in hot weather. It has been recently proposed to mix pure glycerine with the yeast, instead of sugar. The efficiency of the preparation was tested, and found to be good after four months' preservation in winter.

THE OVEN.

The best oven for baking bread is the *brick oven;* but bread can be made at home and baked in the iron oven by the side of the fire, if good care be taken in the operation. There is an Italian expedient for baking bread, which we venture to suggest to ladies who possess only an iron oven. The peasants of Italy bake their loaves in *flower-pots*, or rather in bowls of a similar material in their charcoal fires. Now if the dough be put into a nice new flower-pot of the size preferred, and the bread baked in it (*in* the iron oven), the bread will bake quite as well as in a brick oven, because the heat will be graduated in the same way, and both sides of the loaf, if turned carefully, will be equally well done.

In heating a brick oven fagots of brushwood are used as fuel, or quick-burning coal, which leaves little ash. The oven should be heated for about thirty or thirty-five minutes, then the fuel should be taken out, the floor swept, and the door closely shut to diffuse the heat for about twenty-five minutes before the loaves are put in.

The right heat can be ascertained thus : it is not too hot if the hand can be held in it (not of course touching the bricks) whilst counting twenty. An oven can be generally heated in one hour ; sometimes in even less.

MIXING THE DOUGH.

Put seven pounds of flour into a deep pan ; heap it round the sides, and leave a hollow in the centre ; pour into it a quart of milk-warm water, a large spoonful of salt, and half a gill of yeast ; have ready three pints more of warm water and, using it as you require it, make the whole into rather a soft dough, kneading it with both hands ; when it is smooth and shining strew a little flour on it ; lay a thickly-folded cloth over it, and set it in a warm place by the fire for four or five hours ; then knead it again for a quarter of an hour. In order to knead properly flour the hands, and folding the fingers over the thumb make a fist, and beat and pummel the dough on every side ; work it till it ceases to stick to your hands. Bread cannot be kneaded too much. Cover it over and set it to rise again. Divide it into two or four loaves, and bake in a quick oven. The quantities can be increased as required. In cold weather bread should be made in a warm room, and not allowed to become cold while rising. If it does not rise well set the pan over a bucket of boiling water.

Brown bread can be made from three parts of seconds flour, fourth part of rye, a little milk, and the due quantity of water required for mixing.

Bread may be made without yeast if the following ingredients be used:—One stone of fine flour, two ounces of carbonate of soda, one and a half

ounce of tartaric acid. Mix this flour with *cold* water, and the usual allowance of salt, and put the dough into the oven *directly* it is made—a pint of cold water to *two* pounds of the flour.

Quartern loaves take on an average about two hours to bake; half-quarterns nearly an hour and a half. Bread may be made also with the addition of rice, Indian-meal, potatoes, and sago to the flour in the following proportions of mixture:—one and a half of rice to fourteen pounds of flour; seven pounds of Indian-meal to fourteen pounds of flour; five pounds of potatoes to fourteen pounds of flour; one pound of sago to fourteen pounds of flour. These mixtures cheapen the bread considerably. Indian-meal is the best mixture, as it is nearly as nourishing as wheaten flour, but rice and potatoes *are not* nourishing; they do not supply the wants of the system, because they have very little of the nitrogenized principle which makes muscle and bone, but if meat be eaten in sufficient quantity, potato and rice bread will suffice for the family needs; wheaten bread, however, being always the best.

Potato Bread.

This is one of the best varieties of mixed or cheap bread when it is made with care, as its flavour is excellent, and it remains moist longer than any other except rice-bread; but the potatoes used for it should be good, thoroughly boiled, well dried afterwards (by having the water poured from them, and then standing by the side of the fire to steam), and reduced to a perfect paste by mashing, or by rubbing quickly through a colander or other coarse strainer. They should be perfectly mixed with the flour or meal while they are still warm, and after the addition of rather more salt than for common bread. The dough, which will require less liquid than wheaten dough, should be made smoothly and firmly and be managed afterwards like other bread, but be baked in a more gentle oven. Seven pounds of potatoes weighed after they are cooked and peeled may be added to each gallon of meal or flour. Should it be necessary from circumstances that cannot be controlled, to use such as are watery, the moisture may be partly wrung from them in a warm thick cloth before they are mixed with the other ingredients.*

Unfermented bread is made according to Dr. Pereira as follows:—Flour, one pound; bicarbonate of soda, forty grains; cold water, half a pint; muriatic acid, forty drops.

Aërated bread is made by putting flour into an iron box, moistening it with water into which carbonic acid gas has been forced, and kneading it by machinery inside the box. In ten minutes the dough is ready for baking.

Baking powders are also used instead of yeast. The common proportions of these powders are one part of tartaric acid, two of carbonate of soda, four of potato flour, and a little turmeric powder to give a yellow tint. When mixed with flour and wetted they effervesce and diffuse the carbonic acid through the dough, as yeast does.†

---

* "The English Bread-book." By Eliza Acton.

† Baking Powders.—These are best bought; but if our readers are unable to procure any, they can be made thus:—One pound of ground rice, half a pound

Oaten bread requires to make it warm water, a good deal of yeast, and much kneading—but it is not good.

Barley bread takes less yeast.

We need scarcely observe that a piece of sour dough will act instead of yeast, and *leaven* the bread ; but the bread has always an acid taste.

The water used for bread making should be *soft* water, if it can be had, well-filtered. The more water used the looser the dough will be, and if baked in tins it will be the lighter, or bran water is excellent, adding quite one-fifth to the bread. It is prepared thus :—Boil three pounds of bran in water for every twenty-eight pounds of flour you mean to use ; boil it for an hour ; strain the water off through a hair sieve, and use it for mixing the flour.

Sago Bread.

Sago is procured from the sago palm. The meal is extracted from the pith by rubbing it to powder, and then washing it with water in a sieve.

It makes alone a kind of bread or hard cake, and is the chief food of the inhabitants of New Guinea, and parts of the African coast. It is stated that two and a half pounds of sago bread will suffice for daily food for a healthy man.

For numerous receipts for bread, cake, and biscuit making we refer the reader to Warne's "Model Cookery Book."

Flour should be kept in a chest or bin in a dry place. A good *tin* bin is better than a wooden one ; it is drier, and is proof against vermin.

Grown flour, as it is called, is the flour of wheat which, in consequence of much rain, has germinated in the field before it could be harvested. Our readers will understand from what we have before said on the subject (see p. 118), that the effect of germination is to change the gluten into diastase, which converts the starch of the flour into sugar. Now flour deprived of gluten cannot retain carbonic acid gas, and yeast consequently cannot act on it ; therefore grown flour makes only heavy and indigestible bread. We should, of course, never purchase it ; but supposing that we are in a wild land where we sow and reap, harvest and grind for ourselves, it is well to know that our grown wheat *may* be used. It must be *kiln-dried* before grinding ; the flour should have forty grains of carbonate of magnesia to the pound of flour added to it, if very bad. Bread made of

---

of carbonate of soda, and six ounces of tartaric acid : this last ingredient must be beaten in a mortar, or crushed with a rolling-pin, to make it as fine and smooth as possible before adding it to the rest. The whole is to be passed through a sieve, and kept in a dry place for use, in a glass bottle with a wide mouth. In using mix with cold water, and put the dough made instantly into the oven. Or,

Two ounces of tartaric acid, three ounces of bicarbonate of soda, and three ounces of potato flour. Mix, by passing them through a dry sieve altogether.

Baking Powder for Hot Rolls.—Six ounces of carbonate of soda, four ounces of tartaric acid, two ounces of finely powdered and sifted sugar, one ounce of salt ; mix well. After the flour is made dough with milk, add one teaspoonful of the powder to every pound of flour, knead it well in. The powder is kept for use well corked up.

grown flour requires the oven to be extra hot, and the bread must be eaten when quite stale. In the north of Sweden where the sun often refuses to fully ripen the grain, it is exposed to dry in the sun and air on a rack which is to be found outside most houses, and where it becomes fit for use, though cut before it is quite ripe.

French Bread.

Two quarts of flour, scald one pint of it; butter, half the size of an egg; mix with cold water, two-thirds cup of yeast. When mixed, knead fifteen minutes, using as little additional flour as possible. Let it rise twelve hours. Cut and work with a knife ten minutes before putting it into the pan to bake.

Bread Griddle Cakes with Water.

Soak pieces of stale bread in water till quite soft; drain them through a sieve, rub the bread through a colander. To one quart of this add three eggs and milk to made a thick batter. Bake on a griddle.

Soda Griddle Cakes.

One pint milk, two teaspoons cream tartar, one teaspoon soda, flour to mke a thin batter.

Weights of Bread.

A quartern loaf should weigh 4 lbs. $5\frac{1}{2}$ ozs.
A half-peck loaf, 8 lbs. 11 ozs.
A peck or stone of flour is 14 lbs.
A bushel, 56 lbs.
A sack, 5 bushels, or 280 lbs., or $2\frac{1}{2}$ cwt.

Bakers may be required to weigh the bread they sell, but fancy bread is not sold by weight.

To Discover Alum in Bread.

Heat a knife and stick it into a loaf. If alum is in it, it will slightly coat the knife.

Alum may also be discovered in bread (if it be present) by dipping a slice of the loaf into an infusion of logwood. The logwood will turn a purplish carmine if there is alum in it.

Bread is not good if there are black specks on the upper crust, or if the bottom crust grows moist and sodden by standing.

BRAN.

Constituent parts in 1 lb.:

	Oz.	Grs.		Oz.	Grs.
Water	2	92	Fat	0	252
Gluten and Cerealin	2	169	Woody fibre	1	242
Starch	8	128	Mineral matter	0	358
Sugar	0	70			

From this table it will be apparent that a portion of bran should be left in the flour.

HOMINY.

Hominy is Indian-corn shelled from the cob, and divested of its skin. It is then dried for use.

There are three sizes of hominy; the middle size is the best.

Wash a teacup of hominy in plenty of water, rubbing it between the hands; all that is not good will rise to the top; drain off the first water, then add more; stir it in this; let it settle and pour off the water; then put to it a quart of water, cover it and let it stand all night. In the morning add to it a teaspoonful of salt, and set the vessel which contains it in a kettle of boiling water over the fire: one hour will boil it. The reason for putting the vessel in water is, that otherwise the hominy is very liable to burn. It may be set in an oven, or over a very gentle heat, without danger of burning. When all the water is absorbed, stir it well with a spoon, turn it out in a deep dish, leave it and serve for breakfast with broiled steak, fried oysters, or chickens. This is extremely palatable and wholesome, and much liked though not generally known. Some hominy is much sweeter than other. It may be eaten with butter for breakfast, or with a sauce of butter, sugar, and nutmeg for dessert, the same as rice.

Coarse hominy requires five or six hours' boiling. Cooked with dried beans and pork, it is called succatash.

MILK, CHEESE, AND BUTTER.

1 lb. *of Cow's Milk contains—*

	Oz.	Grs.		Oz.	Grs.
Water	13	333	Sugar	0	315
Casein	0	350	Mineral matter	0	70
Butter	0	245			

The substance *casein* (the curd which forms the cheese) resembles the gluten of vegetables, the fibrin of meat, and the albumen of the egg in nutritive qualities; it possesses the same value, weight for weight, as food; but when eaten alone as cheese, is, like eggs, a constipating food.

When the curd and cream have been taken from the milk, and the whey is evaporated to dryness, sugar of milk is obtained; this sugar represents the starch of wheaten bread, while the butter and curd or casein represent the fibrin and fat of meat; consequently milk partakes of the nature both of animal and vegetable food.

The power of retaining the globules of air or steam in moistened flour when baking, possessed by the white of egg, belongs, though in a less degree, to the curd of milk; consequently bread is much improved in lightness and appearance when it is made with milk.

Asses' milk is considered excellent for invalids. 1 lb. of it contains:

	Oz.	Grs.		Oz.	Grs.
Water	14	76	Sugar	0	420
Casein	0	140	Mineral matter	0	35
Butter	0	105			

Milk is full of very minute globules of oil, which may be seen by the microscope floating on a transparent liquid. It would take 10,000 of them to cover an inch if placed side by side. These globules are transparent in themselves, but they cause the opacity of the milk by scattering and bending the rays of light which reach them. If milk is left standing the greater number of these oil globules rise to the surface and are called cream. The milk beneath (which becomes skim milk) is nearly transparent, and would be quite if all the globules had risen. Churning cream *breaks* these globules (each of which is enclosed in a thin membrane or bag) and the oil united into a mass is easily made into butter. The Devonshire clotted cream is made by heating the ordinary cream nearly to the boiling-point, when the envelopes of the oil globules burst; the rich oily cream after standing some hours is skimmed off.

The casein or flesh-former in milk is held in solution in it by an alkali which is known to have the power of doing this; an acid, by neutralizing the alkali, solidifies the casein into CURD. When milk is drunk, the acid of the gastric juice at once renders the casein of the milk solid in the stomach; and milk soured by keeping will, as we all know, curdle.

An acid thrown into milk produces the same effect, and changes it to curd and whey.

Rennet, by producing acid and rendering the casein insoluble, helps us to obtain it for the manufacture of cheese; the substance next perhaps to animal food in nourishing properties.

The milk of ewes and goats is the richest, possessing as much as nine per cent. of casein and ten per cent. of butter.

Milk is adulterated with water, chalk, and starch, and is sometimes sold as pure milk when it is quite *skim* milk.

The Lactometer is the instrument used for testing milk, and should find a place in every well-furnished house. It is a glass tube, closed at one end, and marked with fine divisions on the outside. The milk is left for twenty-four hours in the tube, and the depth of the cream which forms on it can be ascertained by means of the graduations marked.

Chalk leaves a white sediment at the bottom of the glass if milk is left standing. The milk should be poured off without disturbing this sediment, and water should be poured on it, and it should again be allowed to settle; repeat this a second time and a white powder will be left. If it effervesces with an acid it is chalk.

Cream may be kept by putting two or three lumps of sugar into it; boiling it first. It may be kept, *if scalded*, without sugar.

To make Curds and Whey.—Into a tumbler of new milk put half a teaspoonful of *dissolved* citric acid (or squeeze a lemon in). The milk will curdle directly, and the whey will be clear and acid.

We must not, in treating of milk, omit to mention the recent preparation of Swiss milk, which has taken so good a place in the nourishment of infants brought up by hand. It is a valuable preparation, and if kept in the house will often be found of the greatest service for some pressing and sudden need; mixed with water it is equal to and better than any bought milk. The Dairymaid brand is the best. It can be bought at from 8½*d.* to 1*s.* per tin. Babes who cannot be reared on bought cow's milk, will thrive on Swiss milk.

A simple preventive of milk "turning" in summer is, to put fifteen

grains of bicarbonate of soda to each quart of milk. It does not affect the taste.

CHEESE.

Cheese contains in 100 parts—

Cheddar.		*Skimmed Cheese.*	
Water	36	Water	44
Curd	29	Curd	45
Fat	30½	Fat	6
Ash	4½	Ash	5

In making cheese the milk is first curdled with rennet. The curd is then separated from the whey; in which the milk of sugar remains in a liquid form. The curd is carefully pressed and dried. It will be seen that both the rich and poor cheeses are without sugar or starch. To supply this lack *bread* is eaten with them, bread being the vegetable food containing it. Skim-milk cheese would require butter to be eaten with it also, in order that the due proportion of nourishment might be obtained from it. When the curd has been obtained by rennet, it is salted to keep it from putrefaction, and sometimes coloured with annatto or carrot. It is then *pressed* into a cheese. The cheese is kept in a dry place to ripen, as it is called. This process is a kind of fermentation by which certain acids are produced.

The richness of cheese depends on the quantity of cream left in the milk used for it. Skim-milk forms the poor and salt cheeses (as Dutch cheese, etc.). They contain casein and little else, but are nourishing.

Stilton cheese is made of milk with cream added to it.

Cream cheese is made from cream alone. It is eaten fresh.

The chief makes of cheese are—Stilton, which is very expensive, from 1*s.* 2*d.* to 1*s.* 6*d.* per pound; Cheddar next in price; Cheshire, Wiltshire, Derbyshire, Gloucester, and Irish, Scotch, Dutch, and American. We may add, as luxuries, Parmesan, Neufchatel, and Gruyère cheeses. American and Dutch cheeses are extremely cheap—7*d.* or 8*d.* per pound; Gloucester is about the medium of expense.

Cheese is chosen by taste: the strong and pungent ones are the most economical, as less is eaten at a time; the mild and creamy consume rapidly. In large households it is advisable to lay in cheese in the autumn; but in small families and towns it is best to buy it as required. One person cannot consume more than half a pound of cheese in a week, with meat. If a larger piece of cheese happens to be sent or bought than can be eaten at once, the piece to be kept must have a buttered paper tied over the cut side, and then be tied up in strong brown paper and kept covered over in a very cold and dry place.

BUTTER.

Butter is either fresh, potted, or salt. The potted butters are the Dorset, Welsh, and Ostend, and are slightly salted. The salt butter is coarse looking, but will keep a long time. The mode of making butter will be found in the article entitled "The Dairy." Butter has been frightfully expensive in London of late years; the best cannot be bought

under 2*s*. per pound. This rate has caused great adulteration in the article, of which the most frightful stories are told : the suet or fat of dead dogs melted down with oils and chemically prepared, is said to be sent to Holland, and from thence imported back as Dutch butter : nay, by a chemical preparation, the slimy sewage of the Thames is said to be convertible into butter. It is wise, therefore, for the housewife to have her butter sent up from a dairy she knows, if possible ; if not, she should buy it at a first-class shop and give a good price for it.

Butter should be kept in a terracotta stand ; in hot weather ice is required to keep it firm and sweet. Those who are unable to procure ice may refrigerate it by placing the bowl which holds it in a basin of saltpetre and water ; cover the bowl over, lay on and round it a clean cloth with its ends in the saltpetre water, which by capillary attraction will keep it wet all over. Stand it in a cool, *dark* place, for light and heat are inseparable.

To Sweeten Rancid Butter.

If butter which has become rancid be washed with new milk, and afterwards with water, it will become as good as ever. The rancid flavour of butter that has been long exposed to the air is due to what the chemists call *butyric* acid, which, being soluble in milk, accounts for that fluid removing the bad taste of rancid butter. The water with which the butter is afterwards rinsed is used to take away any of the superfluous milk which, if left on the butter, would become sour. The manner of "washing" butter, or any other greasy substance, is to knead it in the cold fluid after the fashion of kneading dough.

Thick sour milk taken from the pan carefully with a skimmer without breaking, may be eaten with sugar and nutmeg over it. It is both cooling and palatable.

Buttermilk is used sometimes to make pot-cheese or cottage-cheese.

To Make Pot Cheese.

Put buttermilk and thick sour milk together—about one-third buttermilk. Put it into a clean vessel over the fire, make it scalding hot ; then take the curd from the whey with a skimmer, put it into a muslin or linen bag, tie it up, and hang it to drain. After an hour or two take it down, moisten it slightly wlth sweet cream, put a little salt to it, work the salt into it and make it into balls the size of a teacup. Press them closely, lay on a cloth, and keep in a cool place. Serve for breakfast or luncheon. They should be eaten *fresh made.*

Cheese Pudding.

Well beat two eggs, add to them a teacupful of cream, a little salt and pepper and two large spoonfuls of best grated cheese. Mix all well together and bake in a *quick oven.*—Or,

Beat one egg and mix it with two tablespoonfuls of milk, one of bread crumbs, and a quarter of a pound of grated cheese. If the cheese be dry, add half an ounce of warmed butter to the milk.

This pudding may be put into a mould, and boiled forty minutes ; or, baked with bread crumbs and salamandered.

BEEF.

Constituent parts in 1lb.:

	Oz.	Grs.		Oz.	Grs.
Water	8	0	Fat	4	340
Gelatine	1	62	Mineral matter . .	0	350
Fibrin & Albumen	1	122			

Beef is the flesh of the ox, and is considered the staple animal food of England. Beef contains *fibrin*, which resembles the *gluten* of plants in composition and properties. The amount of water in beef is as great as it is in the potato or plantain. It does not contain a particle of starch; but its fibrin is three times as great as that in ordinary wheaten bread; therefore, as far as this matter goes, one pound of beef is equal to three of wheaten bread. The *fat* in beef makes up for the lacking starch, as it yields a great amount of heat to the system. Fat, in fact, gives more heat during its combustion than any other form of food. Fat meat is therefore the best to purchase.

The heavier the meat is the more water it contains, and this has to be paid for in the meat: it evaporates in roasting. The juice of beef, when extracted, contains a small proportion of a substance called *Kreatin*, which is rich in nitrogen, and has a certain likeness to the peculiar principle of tea and coffee (*theine*). This substance has an exhilarating effect on the human system, as a species of tonic; and is the cause of *beef-tea* being so supporting to invalids.

Beef should be marbled with fat through the red lean, and should possess a good amount of separate fat (suet). The animal should have a third of its whole dead weight of fat.

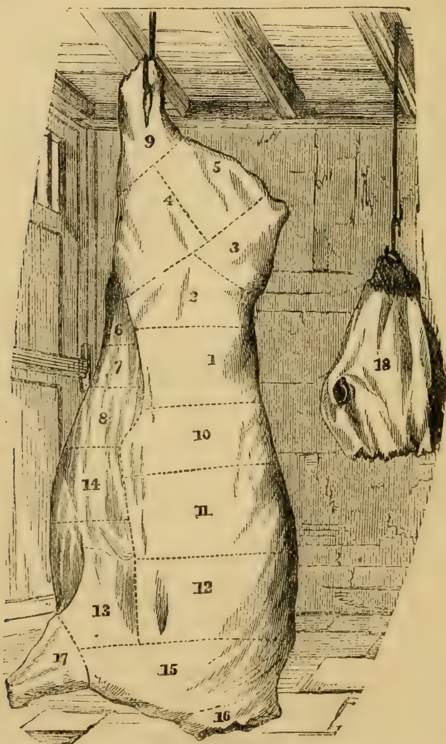
Beef, in cooking, loses on an average 1 lb. in four when boiled; 1lb. 3 oz. when baked; 1 lb. 5 oz. when roasted. This is caused by the evaporation of the water and the melting of the fat into dripping.

In boiling there is less waste if the meat be *plunged into boiling water*—not boiled in cold water, when a greater loss will take place, by the unconfined juices slowly passing into the water, which thus becomes stock or pot liquor. The reason is, that the heat contracts the outer surfaces, and coagulates the albumen in the meat juice; thus preventing the escape of the juices into the water.

Meat contains in a liquid form in its juices, ALBUMEN—the white of egg—exactly as it is in an egg before it is boiled. This albumen surrounds the fibres; its use in preparing meat for food is to preserve the fibres from contracting and hardening. This it does by coagulating, or thickening, as soon as sufficiently heated, as white of egg does, and thus covering and preserving the fibres from hardening under the heat. The more albumen there is in meat, therefore, the tenderer it is. Now all young animals have more albumen in the juices than old ones, therefore their flesh is more tender; but, in consequence, they give less gravy, and from the quantity of coagulated albumen in their meat it is *white.*

Beef and mutton are brown and juicy, because they have less albumen than veal and lamb.

Gelatine is the glutinous matter in the bones of animals ; it exists also in a small degree in the flesh. But two ounces of bone contain as much gelatine as there is in one pound of meat. Powdered bone can be dissolved completely into gelatine.



An Ox is divided by the butcher into the following joints :—*London style.*

1. Sirloin.
2. Top, or aitch-bone.
3. Rump.
4. Buttock, or round.
5. Mouse buttock.
6. Veiny piece.
7. Thick flank.
8. Thin flank.
9. Leg.
10. Fore-rib (5 ribs).
11. Middle rib (4 ribs).
12. Chuck rib (3 ribs).
13. Shoulder, or leg-of-mutton piece.
14. Brisket.
15. Clod.
16. Sticking.
17. Shin.
18. Cheeks or Head.

Osmazome is the flavouring matter of meat. The flesh of old animals has most of it. Under the influence of dry heat osmazome acquires higher properties and gives a finer flavour.

Meat is under-dressed when it has only been sufficiently heated to

coagulate the albumen, but *not* to coagulate the colouring matter of the blood. It is perfectly dressed when it has been heated throughout to a temperature sufficient to coagulate the colouring matter of the blood.

It is too much or over-dressed when the heat has lasted long enough to harden the fibre.

A quick heat in roasting causes the fibres of the meat to contract and close up the pores ; it coagulates the albumen (as boiling water will) which at once stops up the pores and retains the whole internal juice. Then the cooking is carried on by the agency of the natural moisture of the flesh. Converted into vapour by heat, a kind of steaming takes place within the piece of meat, so that, whether in the oven, on the spit, or in the midst of boiling water, it is in reality, when skilfully done, cooked by its own steam.

Meat should therefore be cooked by a quick strong fire, and brought near it early, if it is liked with the gravy in it ; slower cooking makes it less full of red gravy, but, if well managed, the juices can be retained fully as well.

An ox should be five or six years old before it is killed ; it is then in its prime ; the fat should be white (yellow fat is not good), and the suet firm and white ; the lean, as we have said before, should be marbled with fat—otherwise, in cooking, when the water evaporates there will remain a *dry* tough piece of meat. Heifer beef is paler than ox beef and closer grained, the fat whiter, and bones smaller. Bull beef is of a dark purply red colour, coarse-grained ; has little fat, and a strong meaty smell.

Joints for roasting.

Ribs.
Sirloin.
Chump of rump.
Mouse buttock.
Topside.
Fillet of sirloin.
Tongue, fresh.
Heart.

Joints for salting.

Round.
Aitch-bone.
Silver-side.
Brisket.
Tongue.

Joints for frying or broiling.

Rump-steak.
Beef-steak (well beaten).
Liver.

Joints for stewing.

Beef-steak.
Topside.
Brisket and inferior portions.
Liver.
Ox tail.

Joints for puddings and pies.

Beef steak, or
Fillet

For soup and gravy.

Shin.
Cheeks, or any inferior parts.
Ox tail.

A rump- or beef-steak should never be hung up after it is cut off for use ; the air dries all the juice out of it, and it will grow harder, not tenderer. Beating it well with a rolling-pin is the best means to make it tender when it is once cut out of the animal, but the flesh from which it is cut should hang to grow tender in the whole joint.

Salting of Beef.

Beef is salted either by having salt rubbed into it, or by being immersed in brine. Brine is strong enough for pickling when it will support an egg on it. Salt has the effect of contracting the fibres of meat, and drawing out the juice from the pores. You will see this by sprinkling dry salt on fresh lean meat; it will draw out the juice which will be converted (by being dissolved by it) into fluid brine. As much as one-third of the juice of the meat is forced out by the contraction of the fibres when a great deal of salt is used; the salt takes its place. The salt closes the pores by contracting the fibres, and thus prevents the entrance of the atmospheric air, which decays meat. For this reason, salted meat can be kept longer than fresh. But though preserved by salt, meat is robbed by it of much of its nutritive quality—the juice drawn out by the salt contains albumen, kreatin (the substance already described), phosphoric acid and potash. Salt meat will not therefore nourish us as fresh meat does, and, if long fed upon, injures the health; and unless vegetables or lime-juice are taken with it, will cause the terrible complaint called scurvy.

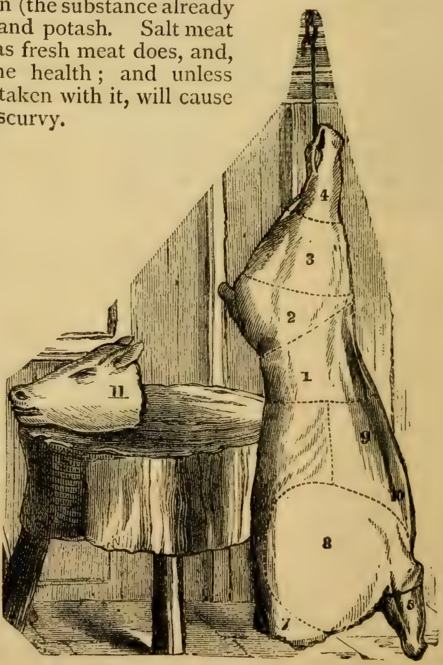
Fat meat keeps longer when salted, if the fat be hard.

VEAL.

Constituent parts in 1 lb.

	Oz.	Grs.
Water	10	0
Fat	2	281
Gelatine . . .	1	82
Fibrin and albumen . . .	1	199
Mineral matter .	0	312

Veal even when it is the flesh of a fatted calf is the most deficient of all meats in fat. It should be small, of a pinky white, and the kidney should be well covered with fat. The calf should not be killed after it is eight or ten weeks old, or the meat will be coarse. Large coarse veal is cheaper than the more delicate kind. The flesh should be closely grained and dry; if it is moist and clammy it is approaching decomposition, and is not fit for cooking.



A calf is cut into the following joints:—

1. Loin, best end.
2. Loin, chump end.
3. Fillet.
4. Hind knuckle.
5. Fore knuckle.
6. Neck, best end.
7. Neck, scrag end.
8. Bladebone.
9. Breast, best end.
10. Breast, brisket end.
11. Head.

Pieces for Roasting.

Fillet.
Breast, best end.
Loin and brisket, best and scrag ends.
Neck, best end.
Heart.
Sweetbread.

For Pie.

Inferior parts.

For Boiling.

Knuckle.
Part of shoulder.
Head.
Tongue and brains.

For Frying.

Cutlets from shoulder, etc.
Liver.

For Stewing.

Breast, brisket end.
Neck, scrag and best end.
Sweetbread.
Feet.

For Soup.

Inferior parts, as scrag, knuckle, etc. etc.

MUTTON.

Constituent parts in 1 lb. :

	Oz.	Grs.
Water	7	16
Fat	6	176
Gelatine	1	52
Fibrin and albumen	0	385
Mineral matter .	0	245

A sheep ought to be kept four years before killing; and home-fed mutton often attains this age, but butcher's mutton is rarely as old or as good as this. The darker the mutton is the better, it is a sign of a mature animal. The fat should be abundant.

Parts to Roast.

Saddle. Haunch. Leg.
Chump end of loin.
Best end of loin.
Best end of neck.
Shoulder. Breast.
Chine. Head. Heart.

Salted.

Leg for ham.

Boiled.

Leg.
Neck, scrag end, and middle.

Fried and Broiled.

Chops and cutlets from loin and neck.
Cutlet from leg.

Stewed.

Scrag of neck with rice.

LAMB.

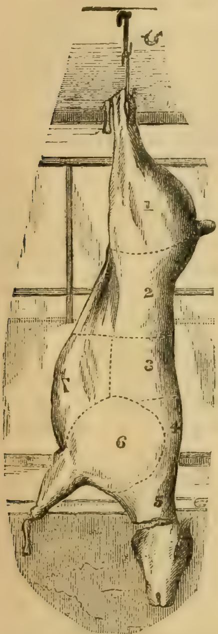
Constituent parts in 1 lb. :

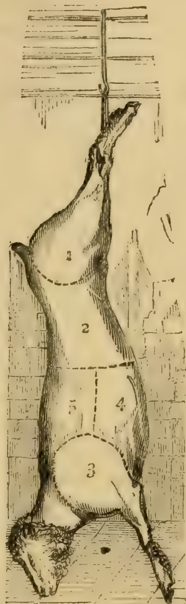
	Oz.	Grs.
Water	8	44
Fat	5	263
Gelatine	0	400
Fibrin and albumen	0	360
Mineral matter . .	0	244

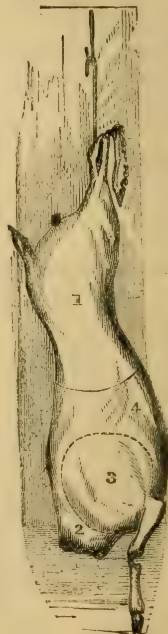
Lamb should be small. House lamb can be had at Christmas. Grass lamb is in season from April to September. The flesh should be pale-

coloured red and fat. The leg of house lamb is sometimes boiled at Christmas and served with white sauce.

Lamb is very expensive.







A sheep is thus divided :— 1. Leg. 2. Chump end of Loin. 3. Best end of Loin. 4. Neck, best end. 5. Neck, scrag end. 6. Shoulder. 7. Breast. A saddle is the two loins undivided. A chine is the two sides of the neck undivided.

Lamb is thus divided :—

1. Leg.
2. Loin.
3. Shoulder.
4. Breast.
5. Ribs.

3, 4, 5, together, Fore-quarter.

A deer is cut up in four portions, thus :—

1. Haunch.
2. Neck.
3. Shoulder.
4. Breast.

VENISON.

Venison should be fat. If the cleft of the haunch is smooth and close the deer was young.

Roasting.—Haunch, Neck Breast. *Pasties.*—Shoulder.

Buck venison is in season in the middle of the summer. Doe venison in the winter.

PORK.

Constituent parts in 1 lb.

	Oz.	Grs.		Oz.	Grs.
Water	6	69	Fibrin and albumen	0	315
Fat	8	0	Mineral matter .	0	105
Gelatine	0	385			

Pork should never be bought of cheap butchers or strangers, as the pig is liable to horrible diseases—smallpox, trichinæ, or little worms, measles, scarlet fever, etc. Pork is best purchased from a dairy, the owner of which is known to the purchaser.

The fat should be firm, and the lean white and finely grained, the skin or rind thin and smooth. If the flesh feels clammy the pork is bad. If the fat has kernels in it the pig has been measly. *Very red* flesh signifies scarlet fever.

Pork is the driest and fattest of meat.

Parts roasted.

Spare rib. Loin. Leg. Head.

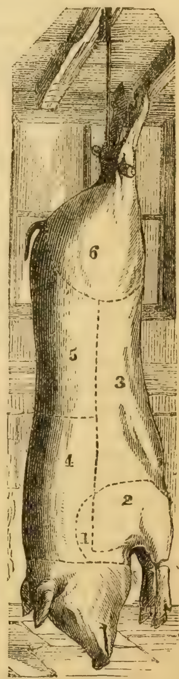
Salted and boiled.

Belly.	Hand.	Leg.	Chine.
Chap.	Pettitoes.	Head.	Tongue.

Fried.

Chops from loin. Pig's fry. Sausages.

Bacon* and hams are salted and smoked pig's flesh. The pig's blood is used in black and white puddings.



A pig is thus divided:—

1. Spare rib.
2. Hand.
3. Belly.
4. Fore loin.
5. Hind loin.
6. Leg.

The Chine is the neck whole.

HOW TO CHOOSE MEAT.

Dr. Letheby gives the following admirable directions for choosing meat of all kinds.

"Good meat has the following characteristics:—

"1. It is neither of a pale pink colour, nor of a deep purple tint, for the former is a sign of disease, and the latter indicates that the animal has not been slaughtered, but has died with the blood in it, or has suffered from acute fever.

"2. It has a marbled appearance from the ramifications of little veins of fat among the muscles.

* Bacon suffers less waste than fresh meat in cooking, and goes further as food. Good bacon should not lose more than from 10 to 15 per cent. in cooking. It

"3. It should be firm and elastic to the touch, and scarcely moisten the fingers—bad meat being wet and sodden and flabby, with the fat looking like jelly or wet parchment.

"4. It should have little or no odour, and the odour should not be disagreeable; diseased meat has a sickly cadaverous smell, and sometimes a smell of physic.

"5. It should not shrink or waste much in cooking.

"6. It should not run to water nor become very wet on standing for a day or two, but should on the contrary dry upon the surface.

"7. When dried at a temperature of 212° or thereabouts, it should not lose more than 70 to 74 per cent. of its weight, whereas bad meat will often lose as much as 80 per cent."—Dr. Letheby's *Lectures on Food*, p. 235.

The parasitic animals which infest butcher's meat are destroyed if the meat be *thoroughly* dressed and raised, during the cooking, to a temperature of 212°.

Roast meat should be frequently basted with its own dripping. Meat can scarcely be basted too much.

Boiled meat if cooked in *cold* water—*i.e.*, put into cold water and raised gradually to boiling point—imparts its juices to the water, and supplies both soup and meat. If plunged into boiling water to shut in the juices the pot liquor will be worthless. Stewing is *very* slow boiling. Broiling is *roasting* over the fire instead of in front of it. Frying is boiling in boiling fat.

For every mode of cooking animal food, see Warne's "Model Cookery."

We subjoin, however, a few words from Dr. Lyon Playfair on the science of boiling.

"In boiling meat for soup, cold water should be used at first, so as to extract as much of the nutrient juices as possible, and the heat be raised gradually. But if the meat be wanted in a boiled state for itself, and not for its soup, then it should be plunged at once into boiling water, and kept boiling for a few minutes, so that all the outer albumen may be coagulated, in order to imprison the sapid and nutritive juices; then cold water should be added till the temperature is reduced to 160°, at which it should be kept till the cooking is completed, because that heat is necessary for the coagulation of the colouring matter of the blood. In all cases no more heat than is sufficient should be employed in cooking. Thus, in making soup, all the fire in the world will not make the water hotter than its boiling temperature, at which point it can be retained by a very moderate expenditure of fuel. Violent ebullition, such as we see cooks often practise, while it does no good, does much harm, not only by wasting coal, but also by carrying off in the steam much of the aromatic and volatile ingredients of the food."

Meat should be wiped with a dry clean cloth as soon as it comes from the butcher's; fly-blows, if found in it, cut out, and in loins the long pipe that runs by the bone should be taken out, as it soon taints; the kernels also should be removed from beef. Never receive *bruised* joints.

Meat will keep good for a long time in cold weather, and if *frozen* through may be kept for months. Frozen meat must be *thawed* before it

---

contains a great deal of carbonaceous matter, and should therefore be used with eggs, veal, beans, and peas, which are rich in nitrogen.

is cooked by plunging it into cold water, or placing it before the fire before setting it down to roast. It will never be dressed through if this precaution is not taken, not even when *twice* cooked.

Pepper is a preventative of decay *in a degree;* it is well, therefore, to pepper hung joints.

Powdered charcoal is still more remarkable in its effect. It will not only keep the meat over which it is sprinkled good, but it will remove the taint from already decayed flesh.

A piece of charcoal boiled in the water with "high" meat or fowls, will render it or them quite sweet. A piece of charcoal, or powdered charcoal, should be kept in every larder. Hams, after being smoked, may be kept any length of time packed in powdered charcoal.

Charcoal powder also darkens and improves the flowers of the dahlia, rose, etc., etc.

The taint of meat may also be removed by washing it with pyroligneous acid (*i.e.*, vinegar distilled from wood), which like charcoal combines with the putrescent particles and neutralizes their offensive smell and taste.

Tough meat may be made more tender by soaking it in vinegar and water. Three quarts of water mixed with three-quarters of a pint of vinegar, will suffice to steep a piece of beef weighing ten pounds. Soak it for six or seven hours.

Most Profitable Joints for Family use.

The leg of mutton is the most profitable joint, containing most solid meat. The neck is an extravagant joint, half the weight consisting of bone and fat. The shoulder has also much waste in bone. The breast does well for kitchen dinner, nicely stuffed; it is much cheaper than the other joints.

Sirloins and ribs of beef are very extravagant joints, from the weight of bone. The roasting side of the round part of the buttock, and the part called "the topside," are the most profitable for family eating. The mouse buttock is used for stewing; shin is used for soup or stewing.

The usual quantity of butcher's meat consumed in a family is on an average three-quarters of a pound a day for each person; but when the family consists of ladies and children, half a pound per day is about the quantity consumed one with another, independent of hams, bacon, poultry, fish and game.

Lard.

Lard is the fat of the pig melted down. The best is made from the kidney fat melted and poured into bladders. In foreign lard kidney and surface fat are mixed and melted down. When pure, lard has scarcely any taste or smell: it should be of a pure white, not too opaque, firm but not hard. If when it is melted it sputters, it is a sign that water has been added to it when prepared. No deposit remains after it has been a second time melted. Any opaque bodies which float in it, or sink to the bottom, are adulterations of flour or starch. Chemical tests only will reveal carbonate of soda or potash and salt, which are often mixed with it. Lard is now sold at 1*s.* per pound. It is used for making pie-crusts and frying, etc.

Dripping is sold in London for *7d.* or *8½d.* per pound. In the house it should be saved and nicely clarified, and will be found most useful for plain meat-pie crust, family cakes, frying, basting, etc.

Miscellaneous Receipts.

To keep Beef.

If you wish to keep beef two or three days in hot weather, do not salt it, but dry it well in a clean cloth, rub ground pepper plentifully over every part of it first, then flour it well and hang it in a cool, dry place where the air will come to it; be sure always that there is no damp place about it; if you find one, dry it with a cloth; but pepper will secure it from this.

To keep Game from Tainting.

Game may often be made fit for eating when apparently spoiled, by nicely cleaning it and washing with vinegar and water.

If you have birds which you fear will not keep, pick them and empty them, rinse them and rub them over with salt outside and in; have in readiness a kettle of boiling water, and plunge them in one by one, holding them by the legs and drawing them up and down, so that the water may pass through them. Let them remain in for five or six minutes, then hang them in a cool place. When perfectly drained, rub them outside and in with black pepper. The most delicate birds may be preserved in this way. Thoroughly wash them before roasting or otherwise cooking them. Pieces of charcoal put about meat or birds will preserve them from taint, and restore what is spoiling.

Poultry or birds should be drawn and wiped dry, and a bit of charcoal put into the body and over the outside of each; it will keep them nicely; or they may be kept in a pot lined with zinc, with bits of ice between them. Pepper keeps them from flies.

To Pickle Meat in One Day.

Admiral Ross's Receipt.

Get a tub nearly full of rain or river water, and put two pieces of thin wood across it, and set the beef on them, distant about an inch from the water. Heap as much salt as will stand on your beef, and let it remain twenty-four hours; then take the meat off and boil it, and you will find it as salt as if it had been in pickle for six weeks, the water having drawn the salt completely through the beef.

To Preserve large Game of all kinds.

Well clean the animal inside; drain the blood, and wipe it out with a damp cloth. Put it in a packing case, and cover the whole body with a thick layer of oats well pressed down. Fasten it down so as to exclude the air, and it will keep for three weeks.

Birds may be preserved for a fortnight in the same way.

Take care to keep out the air, and keep the case in a shady place or on the north side of a wall.

Another Mode.

Partly sink a wine-cask in the ground, fasten sticks across the top and hang the game down inside it. Cover the top of the cask so as to quite exclude the outer air. Of course the game must be first cleaned out and well dried as above.

1. Sheeps Tails fried.
2. Boulette de foie de Veau.
3. Lambs Sweetbread.
4. Sheeps Tongues.
5. Cutlets a la Milanaise.
6. Marrow Bones.
7. Anchovy Cutlets.

Cutlets a la Milanaise—an Entree.

Cut a pound and a half of veal into small cutlets, trim them neatly and put them into a stew-pan with two shallots, a stem of garlic, and a quarter of a pound of butter. When they have become nicely browned draw the pan to the side of the fire, and let the cutlets stew slowly for half an hour, then take them out of the pan and add to the butter and gravy a spoonful of tomato sauce. Let it simmer until reduced, then put in the cutlets, and when they have stewed for about a quarter of an hour, serve them on about a quarter of a pound of maccaroni previously stewed.

Sheeps' Tails Fried.

Time, 1 hour and 40 minutes.

Wash six sheeps' tails; simmer them very slowly till tender. Egg, bread-crumb, and fry them a nice brown. Serve cold for breakfast or luncheon, placing them in alternate cross bars as in plate.

Boulettes au foie de Veau.

Time, 20 minutes.

Mince two pounds of calf's liver very fine with a few slices of ham or bacon. Chop some sweet herbs and mix with it; add a little pepper, salt, nutmeg, the yolks of two well-beaten eggs, and a cupful of cream. Warm over a slow fire till the mixture is firm. Then take it out and make it into balls (well covering your hands with flour); brush the balls over with white of egg well beaten, roll them well in bread crumbs and fry them in boiling butter. When they are done drain them on a sieve in front of the fire, and serve them with piquante sauce poured over them.

Indian Kebobs.

Cut some apples and onions into slices, and some uncooked veal in round slices of a little larger size; have ready some small skewers (silver if you have them), and put on each skewer alternate slices of meat, apples, and onions alternately. Sprinkle well over them some currie powder, and fry them with sufficient butter to cover them. Send them to table on the skewers.

Larded Lambs' Sweetbreads.

Time, half-hour.

Parboil three or four lambs' sweetbreads; let them get cold, then lard them down the middle with strips of fat bacon, and on each side with strips of lemon-peel, and beyond again with strips of pickled cucumber. Then stew them gently for twenty minutes in a pint of veal gravy thickened with a little flour; add a small pinch of Cayenne pepper, a squeeze or two of lemon-juice, and a little mushroom powder. When done pour it round the sweetbreads and serve.

Sheeps' Tongues en Papillotes.

Time, 12 or 15 minutes to fry.

Wash and scald the tongues, and stew them in good stock till tender; drain them on a sieve, then take a buttered or oiled paper, line it with a seasoning of sweet herbs and mushrooms chopped fine and mixed with a little piece of butter, pepper, and salt. Fry them and serve them in the papers garnished with parsley.

Boiled Marrow Bones.

Served on a napkin or on toast.

Saw the bones any size you may prefer, cover the ends with a paste of flour and water, tie a cloth over them and place them in a small stewpan with sufficient boiling water to cover them. When sufficiently boiled, serve them upright on a napkin, as in plate.

POULTRY AS FOOD.

Fowl.

Constituent parts in 1 lb.

	Oz.	Grs.		Oz.	Grs.
Water	12	107	Albumen	0	209
Gelatine.	1	52	Mineral matter . .	0	174
Fibrin	1	322			

Fowls contain less fat than butcher's meat, except the capon, the ortolan, and the livers of Strasbourg geese.

"Poultry and the white meat of rabbits," says Dr. Letheby, "are not of themselves very nourishing; they contain too much nitrogenous matter and too little fat. In the case of aquatic birds, as the goose and duck, the fat is more abundant, but it contains certain flavouring matters which are not easy of digestion. The darker flesh of game is also somewhat indigestible, and requires management in its culinary treatment."

To Choose Poultry.

The cock is young when it has a smooth leg and short spur; when fresh the vent is closed and dark. Hens when young have smooth legs, and the vent is closed and firm. Black legged fowls are used for roasting only.

In young geese the feet and bill will be yellow and free from hair; when fresh the feet are pliable.

Ducks may be selected by the same rule.

Pigeons when fresh have supple feet and vent firm. If discoloured all birds are stale.

Plovers may be chosen by the same rule.

The Turkey.

Turkeys are found in a wild state from Canada to the Isthmus of Panama, and far from being improved by being made a domestic fowl, they degenerate exceedingly.

The wild bird is at least three feet high, and weighs from twenty to sixty pounds. The most beautiful species are the Ocellated Turkeys.

The common turkey is a domestic fowl in England. Norfolk turkeys are thought the best.

When young, the turkey has a smooth black leg with a short spur, the eyes are bright and full, and the feet are supple when the bird is fresh. The absence of these signs indicates age or staleness. The legs of an old hen turkey are rough and the vent is close and firm. The cock bird is best for roasting; the hen boils well.

Game.

GROUSE.—This group of birds contains the grouse proper and partridge.

Grouse are in season in August, and are expensive birds. They are found chiefly in the North of England and Scotland, amongst the heather and morasses. Young grouse are known by a short round spur.

Partridges are natives of the Old World. They are very prolific, laying from twelve to twenty eggs. Ants, larvæ, and the eggs of insects are their chief food. Yellow legs and a dark bill are signs by which a young partridge may be known; a rigid vent shows when they are fresh.

The native country of the Pheasant is the mountainous districts of Asia, but it has been naturalized in England. Our pheasant is supposed to have been brought from the banks of the river Phasis in the ancient Colchis on the Eastern shore of the Black Sea, where it is still abundant. Its scientific name is Phasianus Colchicus. The young pheasant may be known by a short or round spur; in old birds it is long and pointless.

Snipes, Quails, and Ortolans may be known as young birds by the short or round spurs.

Ptarmigan are imported in great quantities from Norway, preserved in ice.

Woodcocks are in season in November. Young birds may be known by a round or short spur; when old the spur is pointed.

Wild Ducks, Widgeon, and Teal are seasonable and often cheap in winter, but Teal are not profitable even then, as they have very little on them.

Quails, Landrails, Plovers, and Larks are delicate food.

Rabbits and Hares.

Rabbits are a very useful article of food, and are not dear, varying from 1*s.* 2*d.* to 1*s.* 6*d.* each. Ostend rabbits, the skinned animals sold at the grocers or porkbutchers, are tame Belgian rabbits kept for their skins. When these are sold the bodies are sent to England and sold at 8*d.* per lb.

Hares are much valued for food. Hare soup is excellent, and jugged hare is also good. Old hares suffice for both. A hare for roasting should be *very* young; a leveret is best. The signs of youth in a hare are these: the cleft in the lip is narrow, the body stiff, and the claws smooth and sharp.—Rabbits the same.—To ascertain if a hare is old or young, turn the claws sideways; if they crack it is young.

The Squirrel.

The squirrel is a lively graceful little animal, the ornament of forest scenery. It builds its nest at the top of the loftiest trees. In it it passes great part of the day, but comes out and gambols in the evening. In the summer it stores food for the winter. Squirrels are not eaten in England, but in America they are considered good food.

After the squirrels have been split and skinned, they may be broiled, fried, or stewed; they are best broiled.

The Kangaroo.

The Kangaroo is an animal peculiar to Australia. It is herbivorous and remarkable for the smallness of its fore-feet and the length of its hind legs and tail, on which it sits upright as on a tripod. The kangaroo has a skin pocket in front of it in which it carries its young, for a period of eight months after their birth.

The tail makes excellent soup, and is used by emigrants for that purpose.

Miscellaneous Receipts.

Cuisses de Lapins a la Maintenon.

Bone two rabbit legs, and stew them with a tablespoonful of chopped mushrooms, same of parsley, and a little grated bacon. Let them cool when done. Cut and oil some paper a little larger than the legs, lay on each piece a thin slice of bacon, then the leg, then some of the seasoning, then another slice of bacon. Fold the paper over, and warm them in a sauté-pan in the oven. Serve on a napkin with fried parsley in the centre.

Partridges a la Russe.

Cut the partridges into pieces and lay the pieces in a stewpan with *no water*, but a little melted bacon fat. Put the pan on a brisk fire and give it two or three turns. Pour in then a large wineglassful of brandy and let them stew for an hour or more; then set the pan by the side of the fire to continue slowly stewing for about half an hour. Strain the birds then from all the fat, lay in the washed-out pan some mushrooms and truffles, put in the pieces and pour over them a good gravy. Warm over a moderate fire, thickening the gravy with a piece of butter, and add the juice of a lemon. Serve hot.

Indian Spatchcock.

Prepare a freshly killed fowl; split it in halves through the middle of the breast and back; pepper and salt; rub it once with butter; grease a gridiron, and broil it over a clear bright fire. Put a lump of butter in a hot dish before the fire; let it dissolve; lay the fowl in it or on a round of toasted bread, and serve very hot.

Game Pie.

Cut some thin slices of venison, well pepper and salt them, and lay them at the bottom of a very deep pie dish (which is put into a wooden pie dish when it is finished baking); cut up two partridges, two pigeons, and a hare, and lay them in in pieces; add two mutton kidneys, a teacupful of pickled mushrooms, forcemeat balls, egg balls, and a good gravy made from the bones of the game, and some stock. If served hot send it up with cover on; if cold, fill up the top with a good aspic jelly.

Macedoine of Larks.

Time, a quarter of an hour.

Pick and clean a dozen and a half larks, bone them, and stuff them with the livers, a little minced bacon, a few sweet herbs chopped very fine, and a seasoning of pepper, salt, and nutmeg; put them into a dish, pour in a little gravy, and bake them in a moderate oven for fifteen minutes. Boil six or eight mealy potatoes, mash them up with a little butter, and arrange them in a deep border round the edge of a dish; fill the centre with carrots and turnips boiled and cut into rings, place the larks amongst and on the vegetables and three or four on the top; pour in a little gravy, and serve.

FISH.

Fish is an important article of food. It is more rich in fibrin or flesh-forming matter than butcher's meat or birds, but it contains less fat and gelatine. Fish frequently contains large quantities of mineral matter, principally phosphates of lime, potash and soda.

The following table is from Professor Johnston's "Chemistry of Common Life," p. 131 :—In 100 parts of

	Fibrin.	Fat.	
Skate	97	3	When perfectly dried.
Haddock	92	8	
Herring	92	8	
Salmon	78	22	
Eel	44	56	

"These numbers, of course, are liable to variation—the herring especially, being very much fatter at some seasons, and on some coasts, than on others. We see, however, that the salmon is justly considered a rich fish, since it contains nearly three times as much fat as the haddock. The epicure has also a substantial reason for his attachment to the eel, since it contains a considerably greater weight of fat than it does of muscular fibre."

Fish is much more easily digested than flesh, and consequently food is required sooner after eating it. The most digestible kinds are the white fish, which have least fat, and require to be fried in fat, or eaten with melted-butter or sauces. Of all fish, the haddock, whiting, and flounder are most digestible.

The salmon, herring, and eel are dressed in their own oil, and are very nutritious.

Fish should never be eaten out of season, as it is then very likely to disagree with the system. The flesh of fish should not have a bluish tinge If it has this quality it is inferior.

Salmon.

Constituent parts of 1 lb.

	Oz.	Grs.		Oz.	Grs.
Fibrin, albumen, and gelatine	2	43	Mineral matter	0	387
Fat	0	301	Water	12	143

The salmon is found in great multitudes in the Northern seas, from whence it ascends rivers in large shoals every spring. It swims with great rapidity, and can leap a height of twelve or fifteen feet. When salmon arrive at a spot fit for spawning, they deposit their eggs at the bottom on the gravel, and then permit themselves to be carried by the current to the sea, where they go to acquire strength, and return again the following spring. Young salmon are born in the rivers, but when they are twelve inches long they descend to the sea like the older fish.

This fish is generally caught in nets stretched across the river ; but in Scotland they are sometimes speared with a many-pronged weapon, called

a leister. They are also caught with a rod and line. They are caught when they ascend the river to spawn; after spawning, they are very lean, and their flesh is of little value. Salmon is, therefore, best in the spring. It is a very rich and nourishing fish. It should have a small head, very thick shoulders and a small tail. The scales should be very bright, the flesh a rich yellowish pink.

Salmon is sometimes crimped; this is done by depriving it first of sensation by a blow on the head, and then scoring it deeply to the bone. Hot and cold boiled it is excellent; or pickled, curried, marinaded, or dried. Usual price early in spring, 2*s.* 6*d.* per lb., 1*s.* 6*d.*, later. The rivers of Norway, Scotland and Wales, produce the finest salmon; salmon-trout, common trout, smelts and graylings belong to this family, and are all excellent fish.

Soles, Turbot, etc.

Constituent parts of 1 lb.

	Oz.	Grs.		Oz.	Grs.
Flesh-formers . .	1	350	Water	13	374
Fat	0	14	Mineral matter . .	0	136

The Turbot, Brill, Sole, Halibut, Plaice, Flounder, Dab and Hake, are all of the same family, and are excellent for food. "Their form is very deep, but, at the same time, very thin, and they are not constituted to swim as other fishes do, with their backs uppermost; but, lying on one side. They reside wholly at the bottom, shuffling along by waving their flattened bodies, fringed with the dorsal and anal fins, and as they are somewhat sluggish in their movements, they need concealment from their enemies. This is afforded them by the side which is uppermost being of a dusky brown hue, resembling the mud on which they rest; and so conscious are they where their safety lies, that they do not seek to escape by flight when alarmed, but sink to the bottom and lie perfectly motionless." If the eyes were placed, as in all other creatures, one on each side of the head, it is plain that flat-fish, habitually grovelling, would be deprived of the sight of one eye, which being always buried in the mud would be quite useless. To meet this difficulty, the skeleton is distorted, taking, near the head, a sudden twist to one side, and thus the two eyes are placed on the side which is kept uppermost, where both are available. In the plaice, the flounder and the sole they are on the right side; in the turbot and brill on the left. "The value of these fish may be estimated from the fact that London pays 80,000*l.* a year to the Dutch for turbot alone."

Soles keep twenty-four hours well. They cost from 2*s.* to 9*d.* per pair.

Plaice varies from 1*s.* to 6*d.* each. Dabs are valueless, and taste of mud.

The Turbot should be thick, the under part of the colour of rich cream; eyes bright, body stiff, gills of a fine clear red. It is boiled, and is excellent, when cold, made into cakes or curried. Soles are fried, boiled and filleted; plaice is best filleted and fried—it is a watery fish when boiled. Dabs and flukes are generally boiled. Turbot is very expensive—sometimes 1*l.* 1*s.* each. Brill, equally good, varies from 8*s.* downwards.

The Cod fish family, or *Ganoids*, contains the cod, the haddock, the whiting, the hake, the coal-fish, the pollach, the ling:—their flesh is very

valuable for diet, both fresh, salted, or dried. The fishery of the cod is the most valuable in the world. The pursuit, the curing, and transport affording employment to thousands of people and whole fleets of ships. The value of the cod taken by British subjects on the coast of Newfoundland alone, is not less than 500,000*l.* annually—they are caught with a hook and line. The cod should have a small head, very thick shoulders, and a small tail.

Cod is best dressed the day after it is caught. It is boiled and served with oyster sauce; the cod, occasionally, has an oyster flavour in its flesh. It is excellent "twice laid"—*i.e.*, served up with potatoes and hard eggs, or curried, or in fish cakes. Price generally from 1*s.* 6*d.* to 10*d.* per lb

The John Dory is a rare fish, flat, and of smallish size. It is sent to London from the coasts of Cornwall and Devon, and is much prized; it is more expensive than turbot. The gurnard and piper come also from the western coasts; they have large and ugly heads defended with spears and plates of armour. They should be split and dried for twenty-four hours.

The Smelt is a small fish, of delicious flavour, resembling the cucumber. It is very expensive when first it comes in, and is used sometimes as a garnish for larger fish.

The Haddock is an excellent and delicate fish. It is delicious stuffed with veal stuffing and roasted, and delicate boiled; it is also dried and eaten for breakfast—price from 1*s.* to 6*d.* each. The Whiting is a very delicate fish, it requires to be cooked at once, as it will not keep. It is fried. The Hake is a coarse but nutritious fish, much eaten on the coast of Devonshire; it is generally stuffed and baked; very cheap; sold in slices. The Ling furnishes the ordinary salt fish.

Mackerel.

Constituent parts of 1 lb.

	Oz.	Grs.		Oz.	Grs.
Flesh-formers . .	3	387	Water	10	374
Fat	1	56	Mineral matter . .	0	57

The mackerel is an excellent fish; it has a blue back marked with undulating black stripes and five false fins. It is a migratory fish, and at certain periods of the year abounds on the coasts of Europe and America. On the western coasts of England the mackerel is captured with nets by torchlight; it is also caught by hook and line. It bites eagerly at anything which appears alive, and is "caught by glare"—a bright fish, a piece of glittering metal, or a bit of scarlet cloth; the line is short, but made heavy with lead; a couple of men can catch 1000 a day. The greater the speed of the boat, the greater the number of fish taken, therefore a fresh wind is called a mackerel breeze. Mackerel fishing is considered delightful sport. The Tunny of the Mediterranean belongs to this family. Its flesh resembles beef.

Mackerel are boiled with fennel-sauce, broiled or fried; also soused in vinegar for a breakfast-dish. They should never be eaten out of season, as they are especially injurious. They are very nourishing fish and cheap. Price, generally from 6*d.* to 3*d.* each.

The Herring, etc.

Constituent parts of 1 lb.

	Oz.	Grs.		Oz.	Grs.
Flesh-formers . .	1	270	Water	12	400
Fat	1	60	Mineral matter . .	0	145

The common herring inhabits the northern seas; shoals of this fish arrive every year on the coasts of Europe and America, but they do not go farther south than 40° of north latitude. In the months of April and May, herrings begin to appear off the Shetland Islands, and towards the end of June, and in July, they arrive in vast numbers, extending over the face of the sea for leagues, hundreds of feet in thickness. The herring fishery is of immense importance; it employs entire fleets of ships. The fish are caught in a net called a gill-net. The herring is an excellent fish; but, probably from its cheapness and its rather strong smell, it does not often appear at table. It is bought at 1*d.* each. Salted, it is greatly relished, and forms an important article of food for the poor.

The Sardine is a species of herring, celebrated for the delicacy of its flesh. It is found in the Baltic, Atlantic, and Mediterranean. During the winter it keeps in the depths of the sea, but about June it approaches the shore in immense shoals, and is caught with ease in nets. The fishermen tempt it into them by throwing into the sea a bait made of cod-fish eggs. The sardine fishery is on the coast of France, from the mouth of the Loire to the extremity of Brittany. Sardines are preserved in oil and eaten as relishes.

The Pilchard, Sprat, Whitebait and Shad, are all species of herrings. Potted pilchards are delicious; sprats contain an immense quantity of fat.

The Anchovy is found on the coast of the Mediterranean and the western shores of France and Spain. It approaches the coast to spawn, and is then taken.

Anchovies are attracted to the net by furnaces lighted in some of the boats; they surround the boat which contains the light, the net is cast so as to surround the shoal, and then the fire is suddenly extinguished. The anchovies, startled and alarmed, turn to escape, and are caught in the net. The head and intestines of this fish are removed, and it is preserved in salt.

Anchovy Cutlets.—Cut some bread, about half-an-inch thick, into the shape of pretty small cutlets, fry them a nice light-brown, then spread thinly upon them some anchovy paste; have an egg boiled very hard, chop it up small, yolk and white, with a little fresh parsley, which pile upon them, and serve hot. (*See* plate).

Sprats are sometimes preserved like anchovies.

The Basse is a sea-perch; it is an excellent fish for food.

Mullets are of two kinds, the red and the sea mullet. The red mullet is considered a great delicacy. It is celebrated as a fish in favour with the ancient Romans, who took pleasure in watching the changes of colour which it displays when dying. Extravagant sums were paid by them for large mullet, and at entertainments they were brought to table alive, and cooked before the eyes of the guests.

For very good receipts for cooking mullet, *see* Warne's "Model Cookery Book." The sea mullet is larger than the red, and is striped with yellow. The grey mullet is an excellent fish.

Fresh-water fish are very valuable inland.

The Perch is an excellent fish. It inhabits rivers, lakes, and running streams, and swims at the depth of two or three feet. It feeds on worms, insects, and small fish. Its flesh is very agreeable food. It spawns in April.

The Perch is one of the most wholesome of fish.

"The Carp," says Isaac Walton, "is the queen of rivers; a stately, a good, and a very subtle fish. It was not at first bred, nor hath been long in England, but is now naturalized. It is said they were brought hither by one Mr. Mascal, a gentleman that then lived at Plumstead. Doubtless there was a time when there were no carps in England, as may seem to be affirmed by Sir Richard Baker, in whose Chronicle you may find these verses:—

> Hops and turkeys, *carps* and beer,
> Came into England all in a year."

Carp feed on grain and vegetable substances. They have in the back part of their mouth a remarkable apparatus for crushing their food. The carp delights in tranquil waters.

It will live, like the eel, a long time out of its native element; and is very tenacious of its life, which lasts for many years. At six years old it weighs about three pounds. During winter the carp buries itself in the mud, and passes many months without eating.

We are tempted to add to this notice Isaac Walton's receipt for dressing a carp, as a specimen of the cookery of the 17th century:—

"Take a carp alive if possible; scour him and rub him clean with water and salt, but scale him not; then open him, and put him with his blood and liver, which you must save when you open him, into a small pot or kettle; then take sweet marjoram, thyme, and parsley, of each half a handful, a sprig of rosemary, and another of savoury. Bind them into two or three small bundles and put them to your carp, with four or five whole onions, twenty pickled oysters, and three anchovies. Then pour upon your carp as much claret wine as will only cover him, and season your claret well with salt, cloves, and mace, and the rind of oranges and lemons. That done, cover your pot and set it on a quick fire till it be sufficiently boiled; then take out the carp and lay it with the broth into the dish, and pour upon it a quarter of a pound of the best fresh butter melted, and beaten with half a dozen spoonfuls of the broth, the yolks of two or three eggs, and some of the herbs shred. Garnish with lemon."

The Barbel resembles the carp, and is a good fish for the table.

The Tench inhabits stagnant waters. It is less esteemed as food than the carp. It has been called the "physician of fish," having in former ages been thought to cure by its touch the other fish in the river or pond.

The Sturgeon is a royal fish.

Every sturgeon caught in the English rivers belongs to the Queen, except those which swim in the Thames below Temple Bar, which are the property of the Lord Mayor.

The sturgeon is as large as a shark, but has no teeth. It lives by suction, but manages to eat herrings, mackerel, and sometimes salmon, and it roots in the mud for worms and mollusks.

The body of the sturgeon is covered with plates of bone embedded in the skin in longitudinal rows. It is a wholesome fish, and very delicious as food; it may be cooked like veal.

The favourite Russian caviare is made from the eggs of the sturgeon. It is chiefly from the swimming bladder of these fishes that Russian isinglass is manufactured.

The Pike.

Constituent parts of 1 lb.

	Oz.	Grs.		Oz.	Grs.
Water	12	281	Fat	0	42
Flesh-formers . .	3	23	Mineral matter .	0	91

The Pike is the most voracious of fresh-water fish. It devours frogs, young ducks, and all the fish which comes in its way. Its presence in a pond very soon depopulates it. Pike four or five feet long are not rare in the great lakes of Northern Europe. In 1497 a pike was caught at Kaiserlauten, near Mannheim, which was nearly nineteen feet in length, and weighed 350 lbs. This monster had a gilt copper ring round its neck bearing this inscription: "I was the first fish that was thrown into this pond by the hands of Frederick II., October 5th, 1230"—it was consequently 267 years old! The pike is excellent stuffed with veal stuffing and roasted. These fish are seldom bought in London for the table, but are justly prized by the angler.

Eels.

Eels inhabit fresh water. By day they lie concealed in the mud or in holes which they excavate near the shore.

When the water of the pond grows low or stagnates, the eels leave the bottom and conceal themselves in the herbage of the shore; they will also at night cross the land in search of a fresh dwelling-place, crawling on the earth like serpents. When the ponds dry up they bury themselves in the sand and remain there till the water returns. The eels deposit their eggs in the sea; in the spring the young eels ascend rivers, and dwell in fresh water till they go to deposit their eggs.

The Conger Eel.

Constituent parts of 1 lb.

	Oz.	Grs.		Oz.	Grs.
Water	11	208	Fat	0	350
Flesh-formers . .	3	233	Mineral matters .	0	84

The Conger Eel always lives in the sea, or in salt water. It is of great size and a very rich fat fish. It abounds at the mouth of the Severn. Eels are stewed, fried, and boiled. The conger eel is cooked in many various ways. (See "Model Cookery," and "Fish and How to Cook them," by Elizabeth Watts.) Eels sell at about 9*d.* per pound. They average from one and a half to two or three pounds.

The Lamprey is a species of eel very much esteemed as food. The sea lamprey is two or three feet in length, and marbled with brown on a

yellowish ground. It inhabits the coasts both of Europe and America; in the spring it ascends rivers to deposit its eggs. The fresh-water lamprey is a smaller species—seldom exceeding eighteen inches in length. It passes the greater part of the year in fresh-water lakes. Its colour is dark olive, yellowish, and silvery beneath.

The Bream is a flat fish. It frequents still water like the pike, and is found in ponds. Its head is very small; it has no teeth; the colour bluish iron-grey. It is best stuffed and roasted like the pike.

The Chub frequents deep rivers, and lives chiefly on worms. Its flesh is not very good, but it is not bad when stewed in rich gravy.

The Roach and Dace are not much valued for the table though perfectly wholesome. They both haunt swift and gravelly streams.

The Barbel, named from its beard, frequents deep and rapid rivers. Its flesh is tasteless and poor.

The Gudgeon is a delicious little fish. It is taken in immense numbers in the Thames and the rivers of Surrey and Middlesex.

The Ruffe also abounds in the Thames. It is a variety of the perch. It is not much prized, and is sold very cheaply to the poor.

The Shad is a migratory fish which enters rivers for the purpose of spawning. It has much of the richness of the salmon, but is only in season for a fortnight just before spawning. After that time it is sold very cheaply.

Fresh-water fish are not always to be found at the fishmongers, but most of them may be had if desired. The price varies, and is quite uncertain.

"All fish," says Dr. Letheby, "are in their best condition at the time of the ripening of the milt and roe, for not only are they fatter at that time, but when cooked they have a better flavour, and the flesh is solid and opaque. On the other hand when they are out of condition the flesh is semi-gelatinous and watery."

The Lobster, Crab, and Oyster.

"On examining a lobster with a little attention," says Professor Jones,* "it will be seen that its head is furnished with four antennæ. . . . . . . Its eyes are compound like those of an insect, and are supported upon a pair of moveable pedicles. There are five pairs of jointed limbs placed on each side of the mouth, which are evidently adapted to assist in seizing and conveying into the mouth the substances used as food." (These organs are termed "foot-jaws.") "The pair of legs which comes next are developed to a size far surpassing that of the other limbs, and are endowed with proportionate strength." Each leg or claw ends in a pair of strong pincers, but they differ in their structure and uses. One claw is armed with sharp teeth; the other has the opposed edges of its terminal forceps provided with large blunt tubercles. One is used as an anchor; the other for tearing and dividing the creature's prey. Then follow behind the claws four pairs of slender legs, but they are not much used for locomotion; that is chiefly effected by the tail, which terminates in a fin formed of broad plates, so arranged that while they will close together during the extension of the tail, and thus present

* "The Animal Creation."

the least possible surface to the water, they are brought out to their full expansion by its down-stroke; and such is the impulse thus given that a lobster will dart backwards to a distance of twenty or thirty feet by one sweep of this remarkable locomotive instrument." Lobsters are caught in wicker baskets called pots. They change their shells every year, and during their moulting remain concealed in the deepest recesses of the rocks. They are in season when oysters are out of season, in the summer; in winter male lobsters only are in good condition. The hen lobster may be known by her coral spawn, which is used for garnishing turbot, and for sauce.

If a lobster is stale the tail hangs limp, while if fresh it is drawn under the fish, and if pulled out will spring back again when it is let go. The quality of the lobster is judged by its weight; a *light* lobster is not a good one. Price averages from 2*s.* 6*d.* to 6*d.* each, according to size and abundance.

Crabs, also, are to be judged by their weight and stiffness. Light and limp they are bad.

Oysters are in season from August to May. They are divided into natives and common oysters; the former being fattened in beds. The mid-sea oysters are dredged for, and are large and coarse. Oysters, if fresh, will close forcibly on the knife when opened. If the shell gapes the least bit the oyster is losing its freshness.

Oysters Stewed with Wine.

Receipt 100 *years old.*

Rub over the bottom and sides of a silver or any other chafing dish a little butter; lay some oysters in it, strew over them a little pepper and minced parsley; then put to them half a glass of champagne, cover them with slices of butter cut very thin; strew grated bread over; put a cover over the dish, and set them cooking, with fire over and under, until they are a fine brown; then take off all the fat, wipe the rim of the dish, and serve hot. This may be done in an *oven* instead.

Oysters au Parmesan.

Instead of grated bread, as in the foregoing receipt, use grated Parmesan, or English cheese.

Oyster Etiquette.

Open two dozen oysters, and put them into a basin; chop a small bunch of parsley very fine, mix with it a little minced lemon peel, half a nutmeg grated, the crumb of a French roll grated fine, and one drachm of Cayenne pepper, well beat the yolks of three eggs; dip each oyster separately into this, and then roll them in bread crumbs until they are thoroughly encased; put a quarter of a pound of butter into a Dutch oven before a brisk fire, and when the butter is melted, arrange the oysters on the tray of the oven, and keep them turned until they are perfectly brown. When baked, serve them up with a plate of bread and butter cut very thin.

A stick of celery eaten with them adds to the relish.

1. *Cheese Pudding.*
2. *Omelette à la Neige.*
3. *Roasted Oysters.*
4. *Spatchcock.*
5. *Scalloped Scallops.*
6. *Lobster Cutlets.*
7. *Buttered Lobster*

Roasted Oysters.

Wash the shells perfectly clean, wipe them dry, and lay them on a gridiron the largest side to the fire ; set it over a bright kind of coal. When the shells open wide and the oyster looks white they are done. Fold a napkin on a large dish, lay the oysters on their shells, taking care not to lose the juice. Serve hot.

Serve cold butter and rolls with oysters.

Buttered Lobsters—American.

Boil a lobster, take the meat from the shell and mince or chop it fine ; put the coral and green inside, but leave out the "lady." To a wineglass of vinegar, or hot water, add a quarter of a pound of fresh butter, a salt-spoonful of Cayenne, one of made-mustard, and put it with the lobster into a stewpan over a gentle fire ; stir it until it is thoroughly heated. Cut three heads of nicely washed lettuce, put them at the sides of a salad bowl, lay the hot lobster in the middle, garnish with a hard-boiled egg cut into slices, and serve it hot.

Lobster Cutlets—excellent.

Pick the meat from a large hen lobster and two small ones, and pound it in a mortar with part of the coral, and a seasoning of pepper and salt, a blade of pounded mace, a little nutmeg and Cayenne pepper. Add the yolks of two well-beaten eggs, the white of one, and a spoonful of anchovy sauce ; mix the above ingredients thoroughly together, and roll it out as you would paste with a little flour, nearly two inches thick. Cut it into cutlets, brush them over with the yolk of egg, dip them into bread-crumbs, and fry them a nice brown in butter. Make a sauce with a cupful of melted butter, a spoonful of anchovy, and the remainder of the coral. Pour it into the centre of a hot dish, and arrange the lobster cutlets round it, as you would cutlets of meat ; place between each the horns of the lobster cut into short lengths.

Shrimps and Prawns.

There are two kinds of shrimp—the brown and the red. The brown keeps near the shore, and is the most highly flavoured.

The red shrimp is smaller, and of a more delicate flavour. It was accidentally discovered in Great Yarmouth Roads by some boatmen who were sweeping for lost anchors. The basket of "swill" let down between the boats to find the anchor returned full of *red* shrimps, which had not before been known.

The prawn is a very large shrimp. It is caught in traps and baited nets on the coast, and at the mouth of rivers. Shrimps bought alive and boiled at home are very superior to those bought ready boiled. This is the case also with prawns. They take ten or fifteen minutes to boil in salt and water. Amongst boiled purchased shrimps we sometimes see a few flat and extended ; this is caused by the shrimp having been dead before it was boiled. It will not be good to eat.

Shrimp Pancakes.

Boil one pound of the best fluke potatoes ; peel and beat them up in a mortar ; then (with a spoon) stir the same up with milk till they become a soft paste ; scatter into the latter half a pint of picked shrimps, dredge a small quantity of flour into the paste, divide it into portions, and fry them separately in a pan with good butter. If eggs are used they will improve them.

Cray-fish, Mussels, etc.

Cray-fish resemble lobsters, but are not equal to them in flavour.

Mussels may be eaten plain. Put a quart of them in a pan, after being well washed, with some onions cut in slices, also a little parsley ; put them on a sharp fire for ten minutes, when they will all open ; then remove the beard and black part, and eat them plain with some of their juice. Mussels are sometimes poisonous. They are not very generally eaten.

Cockles are much liked by some people. They are very good pickled.

Whelks when small are boiled and eaten like periwinkles. When large they can be removed from their shell, and fried as fritters.

Periwinkles are eaten chiefly by the poor.

St. James's cockle or scallop is a very good shell fish. It resembles lobster in flavour, and is scalloped like oysters in its own shell.

Scalloped Scallops.

Take the Scallops out of their shells, cut off their beards and divide each into three or four pieces. Fry some bread crumbs with butter, pepper and salt, until they are brown. Put in the scallops and fry them and the bread crumbs for three minutes, shaking the pan all the time. Pack them neatly in their shells, brown the tops, and serve them.

If the greater shells of the scallop are saved they will supply the place of the silver-scallop shell, in which it is usual to send scalloped oysters, veal, or chicken to table.

Dried Fish.

Salmon, Cod, Herrings, and Haddock are our dried fish. These fish are dried by being salted and smoked ; they are also sometimes rubbed over with pyroligneous acid, which preserves them at smaller cost. Preserved salmon is called kippered ; preserved cod is called salt fish. It is prepared chiefly in Newfoundland, and sent home dry, or in barrels with layers of salt. Preserved herrings are called " Red," or " Bloaters." The former are very dry and salt, and keep a long time ; the latter have very little salt, or smoking, and will not keep long.

Bloaters are sold at ½*d.* to 1½*d.* each ; haddock is dried and salted, price from 3*d.* to 6*d.* each.

Choosing Fish.

For choosing fish we give these rules :—Eyes should be bright ; gills a fine clear red ; body stiff ; smell not unpleasant.

Fish may be preserved well in ice, but it rather spoils their flavour.

VEGETABLES.

The Potato.

The potato contains little flesh-forming matter; it is valuable on account of its starch and mineral substances.

1lb. *of fresh Potatoes contains—*

	Oz.	Grs.		Oz.	Grs.
Water	12	0	Dextrin or gum .	0	30
Flesh-formers .	0	100	Fat	0	15
Starch	2	219	Woody fibre . .	0	228
Sugar	0	223	Mineral ashes . .	0	64

The ripe potato is covered with a thin skin of cork through which water can scarcely pass. It is this cork skin which enables the potato to be kept the winter through.

It is nearly three hundred years since the potato was introduced into this country. This valuable root is now amongst the necessaries of life, being seldom absent from the table of either the rich or poor. Let us trace back its history and see how its progress and uses have become more and more developed as it has added to our daily domestic comforts.

Sir Walter Raleigh has the undoubted credit of bringing the potato into notice, and his name seems as closely associated, in our minds, with this plant as it does with the tobacco, which by his instrumentality was brought to our knowledge. We are, however, more individually indebted to Thomas Herriot, the well-known mathematician, who was one of the "adventurers" sent out under the sanction of Queen Elizabeth, who granted a patent for "discovering and planting new lands, not possessed by Christians," which passed the great seal in 1584. He returned on the 27th July, two years after, and describes a plant called by the natives "Openawk," growing in that part of North America which Raleigh had named Virginia. "The roots of this plant," says Herriot, "are round; some as large as a walnut, others much larger; they grow in damp soils, many hanging together as if fixed upon ropes. They are good food boiled or roasted."

The potato was grown in Ireland before it came to England; first, on the estate of Sir Walter Raleigh, near Youghal, county Cork, where it grew and bore flowers. The gardener gathered the "apples," or "berries," and, in showing them to his master, said, "Is this the fine fruit from America you so highly praised?" Sir Walter pretended to be ignorant of the matter, and desired him to dig up the weed and throw it away. The man, in following his directions, finding a large number of tubers, saved them.

Sir Robert Southwell, President of the Royal Society, informed the Fellows, in 1693, that his grandfather had purchased potatoes from Sir Walter Raleigh, and was the first cultivator of them in Ireland. At the

end of the seventeenth century they were as much used in that country as bread. Dean Swift, in alluding to the families and farmers of Ireland, says, "They live upon buttermilk and potatoes."

> "Leek to the Welsh, to Dutchmen butter's dear,
> Of Irish swains potato is the cheer." *

In Scotland the potato was not largely grown till 1728. A labourer, named Prentice, living in Stirlingshire, planted a little plot of ground from which he partly obtained his livelihood with them. They throve so well, and were so productive, that he retired upon a small fortune which he had been enabled to make, after having witnessed the success of their growth for sixty years. The neighbouring cottagers and farmers seeing the great value of the root, the potato became generally cultivated.

The potato was first planted in England, in Lancashire, owing to a shipwreck, when we are informed that it was accidentally thrown on our shore at North Moels, a soil well adapted for producing this vegetable in great perfection, and where the mode of propagation still maintains pre-eminence, and from whence this important plant has gradually spread through every portion of Great Britain. But it was not for some time generally grown, and was only to be met with in the gardens of noblemen as a "curious exotic;" and in the reign of James I. was considered such a delicacy as only to be provided in small quantities at the cost of two shillings a pound for the Queen's household. Through the succeeding reign and the Commonwealth the potato remained extremely scarce, and its culture was not universally extended till more than a hundred years after the discovery of Virginia.†

Ray (1662) scarcely mentions it, and Evelyn does not name the potato in his "Sylvia," although specially asked to do so by the Royal Society; but thirty years after, in his "Kalendarium Plantarum" (1664), says, "Plant your potato in your worst ground; take them up in November for winter spending; there will be enough remaining for stock though ever so exactly gathered."

The potato found its way on to the Continent at an earlier period than that already mentioned. Peter Cicca, in his Chronicle, printed in 1553, tells us that the inhabitants of Quito and its vicinity have, besides maize, a tuberous root, which they eat and call "Papas." This, Clusius conjectures to be the plant he received from Flanders in 1598, during his residence at Vienna, it having been sent to him by the governor of Mons, in Hainault, who procured it the year before from the attendants of the Pope's legate, under the name of Taratoufli, and learned from them that it was then in use in Italy, but no one knew if its origin were Spanish or

---

* John Gay.

† Looking through the average prices of vegetables at Covent Garden Market, which was drawn up some fifteen years ago, we find that when the new or forced potato first came in they were sold in March, April, and May at the prices respectively of ten, six, and five shillings a pound. During these three months they are considered amongst our greatest vegetable delicacies. The importation of new potatoes from Holland now permits the greengrocers at Covent Garden to sell them at 1*s.* a basket—*i.e.*, about one pound—as early as February.

American. As the Spaniards were at that time sole possessors of South America, there can be but little doubt the plant came from the mountainous parts of Quito into Spain, and from thence to Italy. The Italians becoming well acquainted with the potato, gave it the same title as the Truffle, being also, in habit, an underground root.

Some writers assert that potatoes were discovered by Sir Francis Drake in the South Seas, and others that Sir John Hawkins introduced them into England. It is evidently the sweet potato, or Battata da Terra, that is alluded to, and which was used in England as a delicacy before the introduction of our potato, and was imported in large quantities from Spain and the Canaries. These were supposed to possess invigorating qualities. Kissing comfits and other confections were made from them and from the eringo root. Falstaff says in the "Merry Wives of Windsor:"*

"Let it rain potatoes and hail kissing comfits."

The potato is in general use in France, Germany, and Holland; it was introduced into Sweden in 1726, but was little cultivated there till aided by a Royal edict three years after. It increased rapidly in Russia, and is grown in the East and West Indies.

Attempts have been made to grow the potato in Ceylon; it thrives only in one spot of the interior of the island, from whence the Governor's table is supplied. In China the progress of the potato has been very slow; its value does not appear to be appreciated in that country. The colonists of Australia, New Zealand, and Queensland cultivate the root largely.

Gerrard in his valuable and quaint old Herbal (1597) gives the following account of the potato:—"This plant (which is called of some *sasarum Peruvianum*, or skyrrets of Peru) is generally of us called potatus or potatoes. It hath long flexible branches trailing upon the ground like unto those of pompions, whereon are set greene three-cornered leaves very like those of the wild cucumber. There is not any that have written of this plant, have said anything of the flowers; therefore I refer their description unto those that shall hereafter have further knowledge of the same.

"Yet have I had in my garden divers roots that have flourished unto the first approach of winter, and have growne unto a great length of branches, but they brought forth no flowers at all; whether because the winter caused them to perish before their time of flowering or that they be barren of flowers I am not certain. The roots are many, thick, and knobby, like unto the roots of peonies, or rather the white asphodill joined together at the top into one head, in the manner of the skyrret, which being divided into divers parts and planted, do make a great increase, especially if the greatest roots be cut into divers goblets and planted in good fertile ground. The potatoes grow in India, Barbarie, Spaine, and other hot regions; of which I planted divers roots (which I bought at the Exchange† in London) in my garden, where they flourished until winter,

---

* Act v. scene 3.

† In the Calendar of State Papers relating to India, China, and Japan, is an entry referring to Billingsgate, November, 1621, where, amongst other necessaries, potatoes may be bought.

at which time they perished and rotted. It flourisheth till the end of September; at the first approach of great frosts the leaves together with the stalks do perish. The leaves of potatoes are hot and dry, as may evidently appear by the taste: the roots are of a temperate qualitie. The potato roots are among the Spaniards, Italians, Indians, and many other nations ordinarie and common meat; which, no doubt, are of mighty and nourishing parts, and doe strengthen and comfort nature; whose nutriment is as it were a mean between flesh and fruit, but somewhat windie; yet being roasted in the embers they lose much of their windiness, especially being eaten sopped in wine. Of these roots may be made conserves no lesse toothsome, wholesome, and dainty, than of the flesh of quinces, and likewise those comfortable and delicate meats called in shops, *morselli placentulæ*, and divers other such like.

"These roots may serve as a ground or foundation whereon the cunning confectioner or sugar-baker may worke and frame many comfortable delicate conserves and restorative sweet-meats. They are used to be eaten rosted in the ashes. Some when they be so rosted infuse and sop them in wine: and others to give them the greater grace in eating do boile them with prunes and so eat them: likewise others dresse them (being first rosted) with oile, vinegar, and salt, every man according to his owne taste and liking."

Our old author adds a description of the Virginia potato as follows:—"Virginian Potato hath many hollow flexible branches trailing upon the ground, three-square, uneven, knotted, or kneed in sundry places at certaine distances; from the which knots commeth forth one great leafe made of divers leaves, some smaller, others greater, set together upon a fat middle rib by couples, of a swart greene colour tending to rednesse; the whole leafe resembling those of the winter-cresses, but much larger; in taste at the first like grasse, but afterwards sharp and nipping the tongue. From the bosome of which leaves come forth, long round slender foot-stalks, whereon grow very faire and pleasant floures, made of one entire whole leafe, which is folded or plaited in such strange sort, that it seems to be a floure made of fine sundry small leaves which cannot easily be perceived except the same be pulled open. The whole floure is of a light purple colour striped downe the middle of every fold or welt with a light shew of yellownesse, as if purple and yellow were mixed together. In the middle of the floure thrusteth forth a thicke flat pointall, as yellow as gold, with a small sharp green pricke or point in the midst thereof. The fruit succeeds the floures, round as a ball, of the bignesse of a little Bullesse or wilde plumme, green at the first, and blacke when it is ripe, wherein is contained small white seed lesse than those of mustard. The root is thicke, fat, tuberous, not much differing either in shape, colour, or taste from the common potato, saving that the roots hereof are not so great nor long; some of them are as round as a ball, some oval or eggefashion, some longer and others shorter; the which knobby roots are fastened on to the stalks with an infinite number of threddy strings. It groweth naturally in America, where it was first discovered as reported *Clusius*, since which time I have receiued roots hereof from Virginia, otherwise called Norembega, which grow and prosper in my garden as in their owne native country. The leaves thrust forth of the ground in the beginning of May; the floures bud forth in August; the fruit is ripe in

September. The temperature and vertues be referred to the common potato's being likewise a food, as also a meat for pleasure, equall in goodnesse and wholesomnesse to the same, being either rosted in the embers or boiled and eaten with oile, vinegar, and pepper, or dressed some other way by the hand of a skilfull cooke."

Lord Bacon writes soon after Gerrard, that "If potato-roots be set in a pot filled with earth, and then the pot with earth be set likewise within the ground some two or three inches, the rootes will grow greater than ordinary. The cause may be, for that having earth enough within the pot to nourish them, and then being stopped by the bottom of the pot from putting strings downward, they must needs grow greater in breadth and thicknesse. And it may be that all seed roots, potted and so set in earth, will prosper the better."—Professor Bradley in his work on "New Improvements of Planting and Gardening," (1718), says, after describing other tuberous plants—" Potatoes and Jerusalem artichokes are roots of less note than any I have yet mentioned ; but as they are not without their admirers, so I shall not pass by the method of their culture in silence. The potato rather loves a sandy than a strong soil : I have seen them do well in both, but I have observed that the roots knot much better and are sweeter in the sand."

There have been some prejudices against the potato, on account of its being a species of the *Solanum*, or Nightshade. In Burgundy its use was interdicted, as it was deemed a poisonous and mischievous root, and among other evils was accused of occasioning leprosy and dysentery. In France there was also considerable opposition to the "Pomme de Terre." The philosophy of the age was unable to dissipate this until Louis XV. wore a bunch of the flowers on a day of festivity in the midst of his court. The people then acknowledged its usefulness, and its cultivation as an article of food became universal. The value of the potato has been no less appreciated by our own Queen, who on one occasion appeared before her court adorned with its blossoms.

The potato undoubtedly is amongst the greatest blessings that the soil produces, every part of it being available for use. A bright light, so powerful as to enable the bystander to read by it, issues from the common potato when in a state of putrefaction ; and Professor Lindley mentions that an officer on guard at barracks, near Strasburg, during night, thought that the building was on fire ; and, upon examination, found that the vivid light which had alarmed him proceeded from a heap of potatoes contained in a cellar. The apples, when ripe, foment and yield vinegar ; the stalks produce a cottony flax ; also potash ; its tubercles made into pulp are a substitute for soap in bleaching. In Sweden sugar is extracted from the roots of the potato, which also yield a sweet but not strong spirit, which is so plentiful in that country and Norway as not even to be charged for at meals. The liquor obtained in making potato-starch will clean silk, woollen, and cotton articles without damaging them ; and is also useful in cleaning paint. The fecula, or substance, of the potato answers the purpose of tapioca, and the best soufflés are made with it. Hair powder has also been prepared from the potato farina, and size also obtained from this root, as well as yeast fit for the use of either the baker or brewer.

Waxy potatoes contain but little nutriment ; when mealy, one thousand parts contain two hundred parts of starch (used by the French bakers as

flour, and sold by druggists as arrowroot), forty parts of gluten, twenty parts of sugar, and the rest leguminous fibre and some of the alkaline earths.

Horses will eat potatoes ; they are said to cool the blood, and when used raw to be a remedy for swelled legs. For fattening cattle, sheep, and pigs, mixed with other food they are very nutritious. Potatoes are a valuable article for rearing poultry of all kinds ; they will feed and fatten on them with much less grain in half the time than on corn or even meal alone. Potatoes boiled and mashed, and mixed with meal, are excellent food for dogs.

The Cultivation of the Potato.

The mode of propagating this root is very simple, the common method being to set the potato itself. This applies more particularly to the early kidney varieties, the later sorts and the round potatoes having usually a greater abundance of eyes or buds. In cutting potatoes for sets they should be divided through the crown, as the shoots which rise up from the bottom are strong and vigorous, and produce more stem, which takes from the nourishment of the root by depriving it of the sap. One or two eyes in each set is sufficient. It is desirable to let the wounds of cut potatoes remain for a few days to harden and heal over before planting them. Small potatoes are sometimes preferred for setting, the crop producing usually about the same quantity of potatoes in either case.

The early, or forced, potatoes are raised in hot beds or grown in pots in manure or tan beds (set about Christmas or January) ; but for our usual out-door early crops they are planted in the open ground about the middle of February. They are planted in rows two feet apart and about fifteen inches distant from each other. The potato should always be planted with the crown uppermost (which will make the difference of a fortnight in its appearance above ground), and placed four or five inches in the earth, leaving the soil loosely round them, at the same time covering them well over. When the potatoes are three or four inches high, the spaces between should be well hoed to remove weeds and loosen the soil round them, which promotes the growth ; when the stems have further advanced to about eight inches high, the earth should be hoed up round them to exclude the light from the roots (which turns them green); a second hoeing is sometimes required to prevent the stems from falling.

The late crop of potatoes may be planted in March and April. The ground is generally prepared for them previously, and holes made with a setting stick and the soil trod up over them, whilst the sets may be dropped in by women or boys ; the same directions for weeding and hoeing being pursued in the field as well as the garden culture.

Towards the end of July the early sorts will begin to ripen, and should be taken up as soon as the stalks have withered down. In October and November the general late crops will have arrived at maturity, and should be taken up as soon as possible before severe frost sets in, as they are turned watery by it and rendered unfit to eat. Potatoes should always be dug up with a three-tyned fork, being the proper instrument for that purpose, made blunt and rounded at the ends.

Let potatoes, as far as possible, be dug in dry and sunny weather, as they come up very clean and are ready to house at once ; keep them in a

dry place, and in severe weather cover them well over with a good thickness of straw. They should from time to time be looked over, and such as have any tendency to decay ought to be taken out, as they would soon infect the rest.

Old decayed manure is the best that can be used in the culture of the potato; coal ashes and burnt soil, with a little lime, are beneficial on heavy land. On the coast, sea-weed, in addition to other manures (or separately) is dug in. The richer the land is the better the crop; fresh land may do without the application of manure at all. Potatoes are considered rather an exhausting crop to the soil, and constant planting on the same piece of ground requires the aid of artificial means to assist the growth of the root.

The varieties of the potato are very numerous: they consist of two kinds, kidney potatoes and round potatoes. These sorts differ in earliness, lateness, form, size, colour and quality. Some of these degenerate and others improve when removed from one district to another. The new plants are obtained from seed. Three years are required to elapse before the new root is fully developed in size, and its quality and merits can be properly discerned. Few of the early kinds of potatoes produce blossom, and to obtain seed from them the plant should be deprived of its tubers, and the runners kept above ground by not earthing up. The same sap gives existence to both root and apple, so that by depriving the plant of one it produces the other. In addition to flowers and roots, some potatoes produce stem tubers, which are small bulbs appearing with the leaves. These, when set, will yield potatoes; but very few varieties do this. It is seldom that the root changes when produced from the eye; but Mr. Phillips informs us, in his "Companion for the Kitchen Garden," that Mr. Bate, when he went with the first settlers to Van Diemen's Land, took with him about half a bushel of potatoes for seed which were all of one kind; and to his great surprise when they were dug up, he had five distinct varieties—the White Champion, the Red Round, the Kidney, a small round potato, and a variety commonly called the Miller's Thumb. A sample of each was afterwards sent into a warmer climate, where, on being planted, they all degenerated into one, the original variety."

Many interesting experiments have been made in the cultivation of the potato; the following and most recent is worthy of insertion, being perhaps also the most novel, at the same time highly profitable and simple in its application.

Some few years ago a friend of mine purchased some cuttings from a wash-leather mill (or wash-leather waste, as it is called), consisting as it does of the trimmings and dust produced in the making of the leathers. In a field previously well trenched but not manured, he dibbled the potatoes in the ground, placing in each hole a piece of the leather with the potato, with a small portion of the dust, filling with soil in the ordinary way. The potato chosen for this experiment was the common "Early Shaw;" and the result at first sight seems almost incredible. Many of the potatoes weighed one and two pounds each, the largest one noticed being within an ounce of three pounds. Forty potatoes could easily be found from a few roots to fill a bushel measure, the largest number of tubers on one stalk being seventy-two, and, despite their immense size, none were discovered hollow in the middle, nor on being

cooked was there any bullet-like appearance in the centre, so often found in large potatoes.

Kidney Potatoes.

Admiral Lyons.
Albert Prince.
Albion, early.
American climax.
Ditto cluster.
Ditto white blossom.
Ashleaf, early.
Ditto, red.
Ditto, royal.
Ashtop, fluke.
Beef.
Belgian, fluke.
Berkshire.
Betchfield.
Birmingham prize-taker.
Black.
Blue, farmer.
Bovinia, cattle.
Bresee's prolific.
Buckeye.
Cambridgeshire.
Cavesham defiance.
Champion of England.
Chinese.
Conqueror.
Dane's matchless.
Egyptian.
Fluke.
Fir-apple.
Giant king.
Gloucestershire.
Golden blossom.
Goodrich, early.
Holland.
Imperial.
Jackson.
King.
Lapstone.
Long.
May, early.
Mangold wurtzel, cattle.
Milky white.
Mona's pride, very early.
Napoleon.
Nonpareil.
Painted lady.
Prolific.
Queen.
Racehorse, early.
Rainham.
Rose, very early.
Redall.
Sandringham.
Serpent.
Sheeptail.
Ten weeks.
Viglotte, red.
Ditto, white.
Walnut-leaf.
Ditto, black.
Ditto, red.
Waterloo.

Round Potatoes.

Alibone's seedling.
American ditto.
Betty, early.
Black.
Bread-fruit.
Carlsbad, pink.
Chinese, early.
Cockney, ditto.
Coldstream, ditto.
Dalmahoy.
Daintree.
Emperor of Russia.
Engineer.
Farmer's glory.
Flour-ball.
Ditto, red.
Fortyfold.
Fox's seedling.
Frame, early.
Golden cluster
Ditto, eagle.
Ditto, globe.
Ditto, nut.
Gold-finder.
Goffe-castle.
Hicks' early.
Hougomont.
Irish apple.
Ditto, cups.
Ditto, lumps, cattle.
Jemmy Brown's Fancy.
Kemp.
Leather jacket.
Midsummer, round.
Negro.
Oxford, early.
Ox, noble.
Peach blow.
Pink eye.
Pine.
Peel, Lady.
Prince Charley.
Queen.
Regent, red.
Ring, early.
Round.
Rough, red.
Seaward defiance.
Scotch, early.
Shaw, early.
Skerry, blue.
Victoria.
Wellington.
White rock.
Wood's scarlet.
York regent.
Yorkshire regent.

Disease of the Potato.

The curl is a well-known disease amongst cultivators of potatoes, and is supposed to arise, in many cases, from using over-ripe seed stock, or seed that has been improperly kept during the winter and exposed to the light and air, instead of having been covered with earth, sand, or straw, so as to preserve their juices; or from the want of lime or salt upon the land, and the over-application of strong manures, and successively planting in the same ground. All these evils can be remedied. The disease which has justly excited so much attention is the same as that which has been known in South America from time immemorial, under the name of "Casaque" (great coat), which has been shown at annual periods, and which took, at one time, the form of a true calamity. Considerable losses have been sustained in Germany, where the epidemic caused very great ravages. The worst and most general change showed itself first, in 1843, in the United States of America and in Canada, and re-appeared there in 1844.

The following year it came over to Europe, and there increased rapidly from the 20th of July till the month of October. It showed itself successively in Germany, Belgium, Holland, France, England, and Ireland, in which latter country it increased with great virulence. From Westphalia it was propagated to Mecklenburg, Hanover, Denmark, and Russia. The disease of the potato appears generally in the months of July, August, September, and October; very few cases are observed in June, and scarcely any in May. A mild damp temperature always provokes the development and favours the progress of the disease. The early potatoes generally escape, when we can cultivate them before the time the malady invades us. Towards the time of maturity, this special infection strikes the leaves, passes through the stalk, and generally penetrates to the root, where the destruction is either partial or total. The external sign is the withering of the leaf; it presents a yellowish hue, and, under the microscope, small drops of moisture are visible upon it; minute brown spots then show themselves, the stalks become yellow, and soon after spotted with brown. These changes are observable in a single day. We can more easily distinguish the disease by dividing the potato; when, in the section, may be seen numerous spots of a reddish hue, more or less distinct towards the centre, scattered or in lines. The malady will be made more apparent by cooking in water or steaming the potato which is attacked, and when done, all that part not tainted by the red matter will break easily between the fingers, whilst that affected, or marbled, will resist the pressure and remain solid; or if a slice of potato is put in water and remains there for twelve or fifteen days, the soundest part will be the first to decay, whilst that which is affected will remain unchanged. The first attributed cause was the inclemency of the weather; a second, the degeneracy of the root; a third, a fungous insect; and another, that the disease is sown by atmospheric agency. This is the prevailing opinion, and that it is a kind of floating blight, which the wind wafts from place to place; this has been observed to be checked when coming in contact with a wall or hedge. If a fog or light rain comes on during its flight, it instantly settles on the ground and destroys whatever it comes in contact

with. Learned men have stated that this blight also attacks insects: and give for example the silkworm. The tomato and beetroot, as well as other plants, are liable to the same disease.

Miscellaneous Receipts.

To Choose a Potato.

The finest, mealiest, and most nutritious potatoes are always denser and heavier than the waxy and soft ones. If you put potatoes into a solution of salt, the inferior potatoes will swim on the surface and the good will sink to the bottom. This trial never fails. Specific weight therefore is to be considered in purchasing them.

Barm or Yeast made of Potatoes.

Boil some of the mealy sort, 1lb. for every quart of yeast to be made, till they are quite soft. Skin and mash them very smooth, mix as much of the water in which they were boiled as will reduce them to the consistency of common yeast, but not thicker. To every pound of potatoes add two ounces of coarse sugar or treacle, and when lukewarm stir in for every pound of potatoes two tablespoonfuls of good new beer yeast; keep it stirring and warm for twenty-four hours, or till it has done fermenting, when it will be fit for use (but if older the better). It will keep in bottles three months.

To Boil Potatoes.

Be careful in the choice of the potatoes that they may be as nearly of the same size as possible, so that they may all be equally cooked. Wash them, but do not pare or cut them unless very large; fill a saucepan half full, and put as much cold water as will cover them about an inch, so as to allow for waste in the boiling, that they may be just covered with water when finished. Set them on a moderate fire till they boil, then set them at the side to simmer slowly till they are soft enough to admit of a fork. The breaking of the skin is no test that the potato is cooked inside; pour off the water, the moisture will evaporate and the potatoes will be dry and mealy. You may sprinkle a little salt over the potatoes when done, or add a little to the water before boiling, and afterwards fold a napkin to the size of the saucepan's diameter to keep them hot till wanted. Moderate-sized potatoes will be done in fifteen or twenty minutes. This method of managing potatoes is equal to steaming, and they are dressed much more quickly. The proper way to serve the potatoes is in a wooden bowl, covered with a cloth.

New potatoes are insipid till they are two inches in diameter; they are cooked in a similar way to the above, with the addition of a little mint boiled in the water, and served hot, with a piece of butter in the dish. The best way to clean them is to rub off the skin with a coarse piece of flannel or scrubbing brush.

Potato Cheesecakes.

One pound of mashed potatoes, quarter of a pound of currants, quarter of a pound of sugar and butter, and four eggs, to be well mixed together; bake them in patty tins, having first lined them with puff paste.

Collar of Potatoes.

Beat some potatoes with a little mace and cream, or best butter; work it up and shape it like a collar, leaving out a little to make into round and oval balls; glaze the whole with the yolk of an egg, and bake them of a fine crisp brown; place

the collar in the middle, and lay the balls round it; make a sauce of half a pint of red wine, some sugar, the yolks of two eggs beaten up, with a little nutmeg; stir it gently on the fire till it is pretty thick, then pour it about the dish.

Potatoes Fried in Slices.

Peel large potatoes, slice them about a quarter of an inch thick, or cut them into shavings as you would peel a lemon; dry them well in a clean cloth and fry them in lard or dripping. Take care that your fat and frying pan are quite clean. Put it on a quick fire, and as soon as the lard boils and is quite still, put in the slices of potato and keep moving them until they are crisp, take them up and lay them to drain on a sieve. Send to table with a very little salt sprinkled over them.

Mashed Potatoes.

When your potatoes are thoroughly boiled drain them quite dry, pick out every speck, etc., and while hot rub through a colander into a clean stewpan: to a pound of potatoes put half an ounce of butter and a tablespoonful of milk; do not make them too moist, and mix well together.

Potatoes Mashed with Cabbage or Spinach.

Moisten cold mashed potatoes with a little white sauce; take cold cabbage or spinach and chop either one very finely; moisten them with brown gravy. Fill a tin mould with layers of potatoes and cabbage, cover the top, and put it into a stewpan of boiling water; let it remain long enough to warm the vegetables, then turn them out and serve them. This is a pretty dish for an entrée.

Potatoes Mashed with Onions.

Prepare some boiled onions by putting them through a sieve, and mix them with potatoes. Regulate the proportions according to taste.

Potato Ragout Balls.

Add to a pound of potatoes (cooked) a quarter of a pound of grated ham, or some sweet herbs, or chopped parsley, an onion or eschalot, salt, pepper, and a grated nutmeg and other spice, with the yolk of two eggs. Make into balls, and fry a light brown, or bake them.

Potato Pie.

Peel and slice your potatoes very thin into a pie-dish; between each layer of potatoes put a little chopped onion (three-quarters of an ounce of onion is sufficient for a pound of potatoes), between each layer sprinkle a little pepper and salt, put in a little water, and cut about two ounces of fresh butter into little bits, and lay them on the top, cover it close with puff paste. It will take an hour and a half to bake it. The yolks of four eggs may be added, and when baked a tablespoonful of good mushroom catsup poured in through a funnel.

Potato Pudding.

Boil and peel half a pound of potatoes, and beat them well in a mortar with six ounces of butter, six eggs (keeping three of the whites out), and six ounces of sugar; season with cinnamon, nutmeg, and a glass of spirits. Bake and send it hot to table.

Potato Pudding under Meat.

Boil and skin as many potatoes as will fill a dish, beat them and mix in some sweet milk, give it a boil with a good piece of butter; season with salt, spices, and an onion shred small, put it in a dish to cook under roast beef or mutton till it is a fine brown. Pour off the fat before it goes on the table. Two beat eggs mixed in with the potatoes

before they are dished makes the pudding rise and eat light.

Potato Puffs.

Take cold roast meat, either beef or mutton, or veal or ham, clear it from the gristle, cut it small, and season with either zest, or pepper and salt, and cut pickles. Mash some boiled potatoes and make them into a paste with one or two eggs, roll it out with a dust of flour, cut it round with a saucer, put some of your seasoned meat on one half and fold it over like a puff, and fry a light brown.

Potato Cheese Puffs.

Take some grated cheese, some cold mashed potatoes, and a beat-up egg, with a little butter, and mix well together with a little salt and pepper; put into small patty pans, and bake in a quick oven, turn out, and send hot to table.

Potato Salad.

To one pound of mashed potatoes add a quarter of a pound of beet-root mashed; when quite smooth add two table-spoonfuls of salad oil, and the same of vinegar, and pepper and salt; also herbs, such as onions, lemon-thyme, tarragon, etc., chopped fine.

Potato Scones.

Mash boiled potatoes till they are quite smooth, adding a little salt, then knead in some flour or barley-meal to the thickness required, toast on the griddle, pricking with a fork to prevent blistering. When eaten with fresh or salt butter they are equal to crumpets.

Scalloped Potatoes.

Beat them fine in a bowl with some good cream, butter, a little white pepper, and salt; then put them into scallop shells or shapes, smooth and score them on the top with a knife, lay thin slices of butter over them, and brown in an oven or before the fire. Three shapes are sufficient for a dish.

Snow Potatoes.

Pick out the whitest potatoes, put them in cold water to boil; when they begin to crack, strain, and put them in a clean stew-pan before the fire till they are quite dry and fall to pieces; rub them through a wire sieve on the dish they are to be sent up in, and do not disturb them afterwards.

Potato Grafting.

Take two potatoes of opposite natures, nick a wedge-shaped piece out of one, cut the other to the shape of the indenture and fix them firmly one to another with a hair-pin or thin piece of wire, care being taken to preserve one eye only in each.

Storing Potatoes.

Long experience and inquiry justify us in recommending that potatoes are best preserved if placed in alternate layers with dry sand in a cold dry cellar or outhouse. On similar grounds we recommend potatoes to be taken up for storing during dry weather immediately the leaves have died to a considerable extent. Leaving the ripe tubers in the soil exposed to vicissitudes of temperature and wet, is the most effective mode of inducing disease.—*Journal of Horticulture.*

To Preserve Potatoes till Spring.

Put a quantity of powdered charcoal in the bottom of a potato bin; it will preserve their flavour, and prevent the sprouts from shooting out so early as they otherwise would.

Cabbage.

In season : *Summer*—June to August. *Winter*—October and November. *Red*—July to September.

1lb. *of cabbage contains*—

	Oz.	Grs.		Oz.	Grs.
Water	14	414	Dextrin or gum. .	0	203
Albumen	0	126	Woody fibre . . .	0	35
Starch	0	42	Mineral ashes . .	0	56

Our cabbage-plants of all kinds—broccoli, cauliflowers, cabbages, Scotch and German greens, Brussels sprouts, kohl rabis, etc. in all their varieties—spring from one or more species of Brassica Oleracea which, in their wild uncultivated state, have miserable woody and bitter stems and leaves, and useless spindle-shaped roots.

The word cabbage, in its original signification, means a firm head, or ball of leaves folded closely over each other ; hence a cabbage-lettuce, a cabbage-rose. Cabbages require a soil enriched with animal manure. When a cabbage is cut in the garden, the stalk left should have two cuts made across each other so as to divide it into four ; sprouts will again spring from it.

The cabbage, when decaying, has a peculiarly strong smell of putrid meat, from the large quantity of azote it contains ; therefore the water in which it has been boiled should not be poured *down the sink*, but out of doors, if possible.

The cabbage is the most nutritious of vegetables, except the mushroom and the dried cauliflower. Its flavour is improved by boiling, but it requires to be eaten with fat, in which it is deficient ; therefore fat bacon or pork is quite the proper accompaniment of greens.

A dish in Ireland, known as kolcannon, is the best and most nutritious mode of eating the cabbage.

Kolcannon.

Equal quantities of potatoes and cabbage—peel the potatoes when boiled enough ; chop up the cabbage, beat both together well, and put in a little pork fat, or dripping, or lard—one ounce to a pound of vegetables ; season with pepper and salt, and an onion or two if you like them. The potato's want of gluten is supplied by the cabbage, which is rich in it, and a most nourishing dish is thus made.

Cauliflower.

In season : *June to September.*

The cauliflower, the name of which is supposed to be derived from *caulis* (a stalk), and *florens* (flowering), is a native of Cyprus, introduced in 1694. It requires excessive care in its culture.

Broccoli is supposed to be a species of the cauliflower ; it is in season from November to April.

Cabbage is eaten by the Dutch, Germans, and Americans as sourkraut. We give this receipt (American) for it :—

Have ready a vinegar or white wine cask. About four inches from the bottom have a vent-peg ; take a number of the best white cabbages, strip off all the outside leaves, and slice the heads transversely, or across, as thin as possible, until you have as much as you require, then lay over the bottom of the cask vine-twigs, to the height of the peg ; on these put a layer of sliced cabbage three inches deep, strew it plentifully with fine salt ; use one pound of salt to fifty of the cabbage ; then put another layer of cabbage, and salt and cabbage alternately until the cask is two-thirds full ; let the last layer be of salt ; put cabbage-leaves all over ; cover them with a cloth and a piece of wood which will fit the inside of the cask, and place a heavy stone upon it. After four or five days draw out the peg and let the brine run off, rinse the cloth, wash the board and stone, add more salt over the top, and replace cloth, board, and weight.

Repeat this operation at intervals of not more than a month, till that which flows from the cask is clear and free from smell. Keep the cask in a moderate temperature during the whole year. Take it from the cask with a wooden spoon or fork.

To Serve Sourkraut.

Take out as much sourkraut as you wish from the cask, and soak it for at least two hours in cold water, then put it into a colander to drain ; put it into a large stewpan or dinner-pot ; put on it a piece of corned pork or bacon, and put hot water over nearly to cover it ; cover the pot and set it over a moderate fire for an hour or more, until the pork is done ; serve with the meat on it ; or cut the bacon or pork in slices, strew pepper over them, lay the sourkraut on, put hot water nearly to cover it, cover the pot close, and set it over a moderate fire for an hour and a half. Or it may be boiled with water, and fried sausages put over it and served ; or the sausages may be boiled with it and the skins taken off before serving.

Fried Cauliflower (American).

Having laid a cauliflower in cold water for an hour, put it into a pot of hot water that has been slightly salted (milk and water will be still better), and boil it slowly five minutes, or till the stalk is perfectly tender, then divide it into small tufts, and spread it on a dish to cool. Prepare a sufficient quantity of batter, made in the proportion of a table-spoonful of flour and two tablespoonfuls of milk to each egg ; beat the eggs very light, and stir them into the flour and milk alternately ; a spoonful of flour and two spoonfuls of milk at a time. When the cauliflower is cold, have ready some fresh butter in a frying-pan over a clear fire. When it has come to a boil, and has done bubbling, dip each tuft of cauliflower twice into the batter, and fry them a light brown : send them to table hot. Broccoli may be fried in this manner.

1. *Macedoine of Larks.*
2. *Nettles.*
3. *Broad Beans mashed.*
4. *Game Pie.*
5. *Fried Cauliflowers.*
6. *Hop Tops.*
7. *Indian Kebobs.*

Lentils.

Constituent parts of 1lb.

	Oz.	Grs.		Oz.	Grs.
Water	2	105	Gum	1	153
Casein	4	70	Fat	0	140
Starch	5	262	Woody fibre . . .	2	0
Sugar	0	140	Mineral matter . .	0	105

Lentils are but little used in England as vegetables for the table.

The French use them for soup, and as a broth with crusts of bread. A pint and three quarters of lentils will make a tureenful of soup. They are simmered in pot liquor or stock, with carrots, onions, and cloves, and when done are strained off. The broth is then again made hot and skimmed. Crusts of bread are laid at the bottom of the tureen.

The lentil is well known to readers of Scripture as composing the pottage for which Esau sold his birthright. It forms the "Revalenta Arabica" well known to us, in the present day, as a nutritious and digestible food. The lentil contains a great deal of casein, and is very nutritious.

Peas.

Constituent parts of 1lb.

	Oz.	Grs.		Oz.	Grs.
Water	2	112	Gum	1	193
Casein	3	324	Fat	0	140
Starch	5	403	Woody fibre . . .	1	263
Sugar	0	140	Mineral matter . .	0	175

The Pea is a native of the south of Europe, and was introduced, it is believed, in the reign of Henry VIII.

Green peas are generally eaten when not more than a quarter ripe. They should always be used as soon as possible after they are gathered, as they injure more by keeping than any other vegetable does.

They are rich in flesh-forming matter, 1lb. containing 3 oz. 324 grains (*see* table above) of casein or cheese. Many excellent dishes are made with peas—soups, stews, etc. etc. A nice Eastern dish made from peas is "Dhal," which will be found a good and nutritious addition to our English bill of fare.

Dhal.

Put one pint of split-peas into one pint of boiling water or pot liquor; boil for five hours, till they are soft and pulpy; add a dessert-spoonful of curry-powder, two small onions cut up and fried, two ounces of butter, and a little cayenne, and three cloves chopped fine. It is best to boil the peas some hours before they are required, and warm them with the other ingredients. Serve them with rice, as you do curry.

Beans.

In season : *Broad-beans*—June to August. *French*—June to August. *Scarlet-runners*—July to September.

The Bean is said to be a native of Egypt, and is supposed to have been brought to England by the Romans.

The dwarf Kidney-bean is a native of India, and was introduced about the time of Gerrard.

The Scarlet-runner is a native of South America, and was introduced into England in 1633, when it was considered a flower, or ornamental plant, and was cultivated in the flower-garden only. The kidney-bean and scarlet-runner differ from other leguminous vegetables in the *pods* of all kinds being eaten.

The Americans make an excellent dish called *Succatash* from the bean. As our book is designed for possible emigrants as well as home-readers, we give two receipts for making it.

Take one quart of dried sweet corn to one or two of beans. Put the beans to soak in a basin, with water to cover them ; rinse the corn in cold water and put them in a basin with water to cover it, let them remain until the next day ; within two hours of dinner-time pour the water from the beans, pick out any imperfections, and put them with the corn, with the water in which it is soaked, into a dinner-pot ; cut a pound of nicely corned pork in thin slices, put it to the corn and beans, and put over them hot water, rather more than to cover them ; add a very small red pepper or a salt-spoonful of cayenne, and cover the pot close ; set it where it will boil very gently for an hour and a half, then put it in a deep dish ; add a bit of butter to it, and serve.

The pork may be scored and not cut up, if preferred, and served in a separate dish. Dried corn and beans may be soaked and cooked in this manner, without the pork ; when taken up, add plenty of sweet butter, season with salt and pepper, and serve. Lima beans are the best ; the small white kidney-bean next.

Beans and Indian Corn called Succatash.

Take the husks and silk from a dozen ears of Indian corn, and with a sharp knife cut the kernels from the cob ; scrape gently what remains on the cob with a knife blade ; string a quart or more of green beans, and cut them in inch lengths or shorter, wash them and put them to the corn ; put them with the corn into a stewpan, add half a pint of boiling milk or water, cover it close, and let them boil rather gently for three quarters of an hour; then add a teacup of butter, a teaspoonful of salt, and a salt-spoonful of pepper ; stir them well together ; cover it for ten minutes ; take the beans and corn into a dish, with more or less of the liquid, as may be liked. This dish may be made without butter, by substituting half a pound of nicely-corned fat pork, washed in cold water, and cut in thin slices. No other salt is required. As we have said before, Lima beans and sweet corn make the finest succatash.

Preserving French Beans.

"Procure a large stone jar or a glazed earthenware pan with a lid, such as is employed for pickling pork, and put the beans in it as they are gathered, avoiding those which are too young, as well as those which are too old. They should be gathered when dry, and laid in the pan or jar in layers two or three inches in thickness. Over each layer put sufficient salt to fill up the space between the pods, and leave them just covered. As each layer is put in, it must be pressed down, and a piece of clean board that will fit the vessel should be laid over them, and a heavy weight put upon it to keep the beans underneath the brine. The board can, of course, be easily removed when a fresh layer is added. By this simple method I have supplied families throughout the winter with beans scarcely inferior in flavour to those just gathered in the summer, but better than those grown in a forcing-house. Previous to using, they must be soaked in water for two or three hours, and then sliced up with a knife in the ordinary way."—*Gardeners' Magazine.*

Broad Beans Mashed.

Boil some old broad beans for one hour, mash them through a coarse sieve, and mix with them a little butter, pepper, and salt. Put the mash into a hot basin or mould, and turn it out before serving. (*See* plate.)

The Turnip.

In season : May to July.

1lb. *of Turnips contains*—

	Oz.	Grs.		Oz.	Grs.
Water	14	213	Gum	0	107
Albumen and Casein	0	77	Woody fibre . . .	0	168
Sugar	0	280	Mineral ashes . .	0	35

Fibre less indigestible than carrot-fibre.

The Turnip—a root—is equal in nutritive qualities to Indian-corn meal, being only different in fat ; therefore fat meat should be eaten with turnips.

It succeeds best in a dry, sandy, or gravelly soil.

The turnip is a native of England. It is eaten with boiled beef or boiled mutton.

The Carrot.

In season : May to March.

1lb. *of Carrots contains*—

	Oz.	Grs.		Oz.	Grs.
Water.	14	0	Gum	0	70
Albumen.	0	42	Woody fibre . . .	0	231
Sugar	1	11	Mineral matter . .	0	70
Fat.	0	14			

The large and juicy Altringham carrot is the woody root of the wild

carrot, *Daucus carota*, highly cultivated. It is very nutritious. The carrot is a native of England.

Carrots are used with boiled beef or mutton.

Carrot soup, known as Cressy soup, and carrot pudding are both excellent. Carrot jam is so good that we think it worth while to give a receipt for it.

Boil a few carrots quite tender, rub them through a colander, afterwards through a sieve, and to 1 lb. of pulp add 1 lb. of lump sugar, boil it to a jam, and when nearly cold add the juice of two lemons (strained from the seeds), and the rinds grated very fine, to that quantity of pulp. Choose deep-coloured carrots for this jam.

The Parsnip.

In season : November to April.

More nutritive than turnip or carrot.

1lb. *of Parsnip contains*—

	Oz.	Grs.		Oz.	Grs.
Water	13	53	Fat	0	35
Albumen and Casein	0	87	Gum	0	52
Sugar	0	210	Woody fibre . . .	1	123
Starch	0	245	Ashes	0	70

The Parsnip requires the same culture as the turnip. It is very seldom sent to table, except with salt fish on fast days; but it is really an excellent vegetable.

Parsnip fritters make a capital dish. A native English plant.

The Red Beet

(In season : all the year through)

Is a native of the seacoast of the South of Europe, and was introduced in 1656. It contains a great amount of sugar juice, which has long been manufactured into sugar. 1lb. contains—

	Oz.	Grs.		Oz.	Grs.
Water	13	124	Woody fibre . . .	0	210
Sugar	1	262	Gum	0	70
Albumen and Casein	0	140	Mineral matter . .	0	70

Beetroot is ready for the table in September or October. In taking them up and in boiling them great care must be taken not to wound the outer skin, for if it is scraped and broken all the colouring matter will escape, and the root will be of a dull dingy pinkish white, instead of its own rich red.

Asparagus.

An excellent vegetable, very nourishing and digestible. It is a native British plant, and grows wild in many parts of England and Scotland,

though, of course, the wild plant is wonderfully inferior to the tenderly nurtured and expensive garden asparagus.

Artichoke.

Also a delicate and nourishing vegetable, a native of Italy, introduced in the reign of Henry VIII.

Sea-kale.

Sea-kale was discovered and brought into general use about a hundred years ago by Dr. Lettsom, a celebrated physician and botanist. He happened to find some plants pushing themselves up through the sand on the coast near Southampton, and on inquiry found that the country-people had long been in the habit of boiling the shoots and eating them. The doctor tasted them, and thought them so good that he sent some seed to his friend Mr. Curtis, the originator of the *Botanical Magazine*, who had a nursery garden in Lambeth Marsh. Mr. Curtis wrote a book on "Sea Kale," which brought it into notice, and he sold the seed at high prices. The fisherman's weed is now a dainty for rich tables.

Rhubarb.

The Rhubarb used for making spring tarts and puddings is the foot-stalk of the leaf of the rhubarb plant, a native of Asia, introduced in 1573. Several kinds are now grown in England. It is a very useful plant, as it takes the flavour of any fruit boiled with it, and thus will help to make jams and marmalades cheaply. For example, if mixed with raspberries it will take their flavour, or with oranges, it will help diminish the expense of *pulp* for marmalade. It makes a good marmalade (with almonds and lemon juice) itself, (*see* "Model Cookery,") and is wholesome boiled in milk.

Leeks.

In season : Autumnal months.

The Leek is a native of Switzerland. It is the badge of Wales, and worn in honour of St. David on his day.

Chives

Are native plants of Britain.

Shallot, Garlic, and the Onion.

Onion in season : *Young*—May and June ; *stored*—August to October.

A native of the south of Europe, introduced before the time of Henry VIII. The Shallot is a native of Palestine ; it has been cultivated in England as long as the leek. It possesses a strong and fetid oil in it called oil of garlic, which is much disliked in our country.

The Onion is remarkably nutritious. The dried onion-root contains from

twenty-five to thirty per cent. of gluten. Burnt onions are the best for flavouring and colouring made dishes and soups. The onion keeps well.

It has a strong and unpleasant smell, arising from an oil in it called garlic oil (it is still stronger in garlic), which is retained for a long time in the breath after swallowing it in onion or garlic. It exudes from the pores of the skin in garlic eaters, giving them a strong scent of it, familiar to travellers in Spain, Egypt, Malta, etc. The common onion will scent a steel knife and convey the taste of the garlic oil also to any substance cut by it.

The onion is used much in cookery by ourselves, and to a certain extent raw; it is the common food of the Portuguese, Spaniards, Arabs, and North African people, and being very nutritive takes with them the place of the English labourer's cheese with their bread.

The onion was an object of worship of the ancient Egyptians, and is still excellent upon the banks of the Nile.

The onion is a compound of sulphur and allyle, which exercise a certain action on the system favourable to its general comfort. It is thought that the onion promotes sleep, and is a good cure, put hot into the ear, for earache.

Horseradish.

We mention this plant next, because it contains the same peculiar principle as the onion—allyle, combined with sulphur and a substance called by chemists cyanogen. This substance depriving the garlic oil of its horrid smell, leaves a different odour, though still a pungent one.

Horseradish is used as a condiment, either scraped or in sauce, with roast beef or boiled hen pheasant (*see* Warne's "Model Cookery"). The sticks of horseradish, when taken up, can be kept in sand in an outhouse or cellar till wanted.

The Lettuce.

In season: April to October; *Greek Lettuce*—all the year.

The Lettuce is said to have been introduced into England in 1562, but from what country is unknown. Various kinds from Maryland are now possessed by us. It possesses in its juice a species of opium.

If the stem of the lettuce when it is coming into flower be wounded with a knife, a milky fluid appears. In the open air it soon grows brown and dries; its smell resembles opium and is narcotic. It has a pungent bitter taste, and acts like opium.

The principal ingredient in it is said to be a substance called Lactucine, of which the extract contains about one-fourth of its weight. The juice is called Lactucarium. It exists, of course, in all lettuce leaves; therefore a salad has narcotic and soothing properties. Eaten at night, it induces sleep; by day it calms the nervous system. Lettuce is therefore a valuable article of food.

The Radish.

In season : *Long*—April and May ; *Turnip*—June and July.

Is a native of China, and was introduced into England before 1584. There are numerous varieties ; the long Japan radish is the last. In a degree the radish possesses the oil of the horseradish ; this gives it its pungent quality, which stimulates the stomach and helps it to digest other food.

Spinach.

In season : *Spring*—April to June ; *Winter*—November to December.

Spinach is a nice vegetable ; the Flanders kind is the best. It is valuable as producing both a summer and a winter crop. Of the winter crop only the outer leaves should be gathered, and it will continue to produce fresh ones for many months.

Cresses.

Both water and land cress are very wholesome, because anti-scorbutic. They are not nourishing, but they cool and freshen the blood. Land cress possesses the same pungent volatile oil peculiar to the horseradish and radish.

Sorrel.

An acid leaved root, little used in England, but an excellent anti-scorbutic. To stew sorrel, wash it and leave its leaves a little wet ; put it with *no* other water into a stone jar, and let it simmer as slowly as possible. When done, add a piece of butter and beat it well.

Pot Herbs.

PARSLEY is a hardy biennial, a native of Sardinia, introduced in 1548. It may be gathered for drying in May, June, and July.

TARRAGON is a strong-smelling perennial from Siberia ; introduced before 1548. It may be gathered for drying in June, July, and August.

FENNEL is a perennial which when it once grows in a garden can scarcely be got out of the soil. Fennel may be gathered for drying in May, June, and July.

Sweet Herbs.

THYME and LEMON THYME are natives of the South of Europe, introduced before 1548. They will dry for keeping, and should be gathered for that purpose about the end of July or August.

SAGE is a much taller plant. It is a native of the South of Europe, and was introduced in 1597. It may be gathered for drying in August and September. Sage leaves rubbed on the teeth clean them pleasantly.

MINT.—There are three kinds of Mint—the common or spearhead, used for mint-sauce, boiling with peas, dried, etc. The pepper-mint is only used for distilling, like the penny-royal. They are all British perennials. Mint may be gathered for drying in June and July.

MARJORAM.—There are four kinds: the Pot Marjoram, a native of Sicily, introduced in 1759. The Sweet or Knotted Marjoram, a hardy biennial; a native of Portugal, introduced about 1573, and sown every year from French seed. The Winter Marjoram, a native of Germany, introduced 1640; and the Common Marjoram, a native of Britain. Knotted marjoram may be gathered for drying in July.

SAVORY.—Winter and Summer Savory are natives of the South of Europe, and have been cultivated in Britain since 1650. Summer savory may be gathered for drying at the end of July and August. Winter savory at the same time.

BASIL is an annual, a native of the East Indies, introduced in 1548. All herbs should be gathered in the sunshine, or at least on a very dry day. They should be dried immediately by the heat of a stove or Dutch oven, the leaves picked off and bottled at once.

Jerusalem Artichoke.

The Jerusalem Artichoke is a tuberous-rooted sunflower, a native of Brazil. The name "Jerusalem" is only a corruption of the word "Girasole," signifying to turn to the sun, as is the habit of the plant. Its tubers are dry in September or October. It was introduced in 1716.

Endive.

Endive is a native of China and Japan, introduced in 1548. It is blanched by having the leaves tied over the hearts with strands of bast mat or twigs. There are two kinds, the broad-leaved or Batavian endive, and the Curled, which is the most common.

Gourds.

Gourds are all of a very watery nature, and are consequently chiefly of use (like fruit) for cooling the system. At the same time, the pumpkin has long taken its place as a useful vegetable; it is good also in pies and as a preserve, and is much eaten in America. Here is an American receipt for a pumpkin pie:—Cut up a nice cheese pumpkin, take out the seeds and stringy inside, pare off the rind, and cut the pumpkin small; then put it into a saucepan with a teacupful of water; cover the vessel, and set it over a gentle fire until the pumpkin is soft enough to mash when lightly pressed. Press it through a sieve or colander with a wooden spoon. When it is rubbed through, add enough milk to make it into a thin batter, and to every quart of this batter put four well-beaten eggs. Add a small teacup of sugar and a saltspoon of salt for each quart. Grate in a nutmeg and add a teaspoonful of extract of lemon, or some ginger if preferred. Line a pie-dish with crust, fill with the mixture; lay a strip of paste round the edge, and bake in a quick oven for three-quarters of an hour. Pumpkin-pie may be made in the same way *without eggs*, but it is less delicate.

The Vegetable Marrow, the American Butter Squash, and the Mammoth Gourd are excellent for the table either in soup, boiled, or fried.

Pumpkin Soup.

Peel the pumpkin and cut it in pieces; take away the seeds. Boil it in boiling water and salt till it will pulp through a strainer. Melt a piece

of butter with a wineglass of milk; add to it the pulp when passed through the strainer, with salt and pepper to taste, and a pinch of flour. Let it simmer for fifteen minutes, thicken with the yolk of an egg, and serve.

Pumpkin with Cheese.

Peel, slice, and stew a pumpkin; sprinkle it with salt, fry it in two ounces of butter; grate cheese over it, add a little butter, brown with a salamander.

Cucumber.

In season: *Forced*—March to June; *open air*—July to September.
Neither heat-giving nor flesh-forming.

1lb. *contains*:—

	Oz.	Grs.		Oz.	Grs.
Water	15	173	Chlorophyl . .	0	7
Albumen . . .	0	14	Woody fibre . .	0	35
Glucose . . .	0	140	Mineral matter .	0	35
Gum	0	35			

A cool and pleasant vegetable, delightful in hot climates from the quantity of water it contains, but considered unwholesome. It is eaten with the richest fish—salmon—as a corrective, probably.

Tomato, or Love Apple.

A tender annual, a native of South America, introduced before 1596. This vegetable is used chiefly for flavouring sauces; for that purpose it is invaluable. It makes also an excellent supper dish scalloped, fresh tomatoes, bread crumbs, a little butter, pepper and salt being all that is required. Put the tomatoes, cut in pieces, into scallop shells, cover them with bread crumbs, a slice of butter, pepper and salt. Send them up hot.

Tomatoes make good sauces, vinegar, etc. For receipts for otherwise using them, see "Model Cookery."

The tomato is one of the most wholesome as well as the most universally liked of all vegetables. Its healthful qualities do not depend on the mode of preparation for the table. It may be eaten thrice a day, cold or hot, cooked or raw, alone or with salt and pepper or vinegar, or all together, with like advantage, and in the utmost quantity which can be taken with an appetite. Its wholesome quality arises from its slight acidity, making it as valuable, perhaps, as cherries, berries, currants, and other similar fruits. The tomato season ends with the frost. If the vines are pulled up before the frost comes, and hung up in a well-ventilated cellar, with the tomatoes hanging to them, the "love apple" will continue ripening until Christmas. The cellar should not be too dry, nor too warm, nor too close. The knowledge of this may be improved to great practical advantage for the benefit of many who are invalids, and who are fond of the tomato.

Tomatoes and Eggs.

Parboil one pound of tomatoes and pass them through a sieve; put six well-beaten eggs into a frying-pan with an ounce of butter, and fry them for one minute; then add the tomatoes with a little salt and Cayenne pepper. Stir the whole together and fry it for about two minutes, and serve.

Chicory, or the Wild Endive.

The Chicory is one of our native weeds; it grows in the calcareous or sandy soils of England, has a large pale blue flower and a white parsnip-like tap root, which grows of good size when the plant is cultivated. This root has a bitter juice. It is cultivated in Surrey, Bedfordshire and Yorkshire, and in Germany, Belgium and France.

The root is dug up before the plant flowers; it is washed, sliced, dried and roasted till it is of a chocolate colour. Two pounds of lard are roasted with each cwt. It makes in water a sweetish-bitter beverage, not unwholesome.

The way to detect the unauthorized mixture of chicory with coffee is to put the powder in cold water, *which* (if there is chicory with it) it will colour more or less according to the quantity. *Pure* coffee will not colour cold water.

Chicory makes an excellent winter salad. For this purpose it is taken up in October or November, and stacked in cellars with alternate layers of sand, so that the crowns of the plants just show along the ridge. If the frost be carefully excluded the roots will here soon send forth a profusion of tender, succulent leaves, which, if kept from the light, will be quite blanched.

WILD PLANTS AND BERRIES.

HIPS.—*Made into Jam.*—The hip is the large red berry, or seed, of the hedge or dog-rose. Gather hips when ripe. Boil them in water till they will pulp through a very fine sieve. Take an equal weight of sugar to that of fruit, boil the hip pulp with the same quantity of sugar *thoroughly*, as for any other jam. Fill a stone jar three-parts full with this jam; it is liable to ferment and requires space.

When used mix it well with a wineglass of white wine, and add sugar if required.

This jam is very good.

CHARLOCK is a common weed in cornfields. It much resembles mustard; the young sprouts make excellent greens.

The NETTLE gathered in early spring is excellent. It is a very nutritious vegetable. It should be cut before it shows any flowers, for after blooming it becomes stringy. It is served on toast like spinach, or pressed into a tin mould in the shape of a large leaf. (*See* plate.) To dress Nettles they must be well washed and picked, then put them into a very large saucepan with just sufficient water to prevent their burning, sprinkling in a wooden spoonful of salt Press them down with a large spoon, and when they are

1. Iced Pudding.
2. Biscuit Puddings.
3. Apple Love Knots.
4. Floating Islands.
5. Tomatoes & Eggs.
6. Rumbled Eggs.
7. Broiled Lobster.

quite done drain them in a colander, and chop them up very fine. Mix them with a piece of butter the size of an egg, and a little pepper, put them into a stewpan and make them very hot, press them into a tin, leaf-shape. (These shapes can be purchased at any tin-shop.)

Utility of Nettles.—Steel dipped in the juice of the nettle becomes flexible. Lint dipped in nettle juice will stop bleeding of the nose if applied to the nostril.

Its seeds are said to be a remedy for goître.

Nettles are very good for young chickens; plenty should be left within their range.

THE HOP.—*Constituents*: Lupulin—volatile oil—narcotic—aromatic resin.—The hop plant was brought into England from the Low Countries in the reign of Henry VIII., about 1524. It is now extensively cultivated in England, Belgium, and the United States. The best English hops are the Worcestershire and Herefordshire for pale ale; the Sussex and Mid-Kent are the strongest.

The active principle of the hop is a bitter resinous matter called *lupulin*, and also an essential oil, both of which act on the nervous system. They prevent beer from decomposing and turning acid. Hops are gathered by the hand in September and October, rapidly dried in a kiln, and closely packed in pockets or bags.

Hops have long been celebrated for their narcotic virtues, and to the wakeful invalid a hop pillow has often brought refreshing sleep. The effect is produced by the escape of the volatile narcotic ingredient which is contained in the oil.

Hop-tops are a capital vegetable.

HOP-TOPS.—The young shoots of hop are excellent served as asparagus. Break off the young shoots, tie them in bundles, and boil them in a little pot liquor for twenty minutes. They are served like asparagus with melted butter. (*See* plate.)

The Wild Hop may be dressed in the same way and is good, but has a slightly bitter flavour.

BURDOCH.—The stalks of this wild plant are very good cooked as asparagus.

The COMMON ARUM (lords and ladies) has a tuberous whitish root about the size of a nutmeg. Dried and pounded it is sent to London from the Isle of Portland (where it is dug up by the country people) as Portland sago. Arum root is saponaceous and will clean woollen well; it is also used as a cosmetic; the "Cypress Powder" used in Paris is made from it.

The EARLY PURPLE ORCHIS.—The tuber of this plant is remarkably farinaceous and nutritive. An ounce of it dried, mixed with an ounce of soup stock, is said to be sufficient for the day's food of a working man. Put into milk it will prevent it from turning sour.

The tuber is prepared for use by washing, brushing off the brown skin, and roasting it on a tin plate in an oven from six to ten minutes. It is then placed to dry gradually in moderate heat.

BORAGE.—All parts of this plant contain much mucilage. The stem and leaves contain nitrate of potassia and other saline qualities. It is very cooling, and a tonic. It is a wild plant with a beautiful blue flower. It is used in making "cups" of different kinds. Nothing can

look prettier than the borage with its lovely blue flowers lying on the top of a cider cup. It grows in gardens to a good height.

SEA HOLLY or eringo root is found on the sea shore. It is prickly, has dry horny leaves, and is of a bluish hue. The Swedes eat the young shoots as asparagus. Candied, it is sold at chemists' shops, and is very strengthening.

DANDELION.—This weed is used for making Taraxacum coffee, and is excellent as a remedy for bilious attacks. Blanched dandelion roots make a pleasant addition to a salad; they are blanched like other plants by covering them from the light with earth or sand.

A Mode of Use—Take three pounds of best coffee, one pound of hard extract of dandelion and succory reduced to coarse powder and ground.

WILD SPINACH.—The roots may be eaten in spring like asparagus. "Good King Henry," as it is often called, is eaten also as spinach.

WATERCRESS.—A cooling vegetable eaten at breakfast or tea; it should grow in *very* pure running water; and in the spring be carefully examined, to see that no spawn of toads, etc., is clinging to the leaves.

Some FERNS are eatable (especially the common brake); they should be boiled when they are *quite* young, covered with down, and the fronds bent and rolled up in themselves; they form a delicious kind of asparagus. (*See* Galton's Works.) In Siberia the fern is used in brewing ale. —One third of the fern root to two-thirds of malt.—Dr. Clarke says, "the properties of ferns are tonic, antibilious, and decidedly deobstruent; and therefore a fern, if esculent, might be expected to be very serviceable as a change of diet, to those labouring under dyspepsia and its consequences."

For eating, the young fronds of the fern must be blanched.

"The young fronds," continues Dr. Clarke, "should be cut as soon as they first appear at the surface of the ground, and as low down as may be; and when quite blanched, boiled for one hour, but if tinged with green, for an hour and a quarter, or an hour and a half, the leafy part in the latter instance being rejected, and a sufficient quantity of salt added to give the vegetable a slightly saline flavour."

SOAP-WORT.—The leaves and flowers of this plant are saponaceous; they contain a large quantity of alkali. They may be boiled, and clothes washed in the water will not require soap.

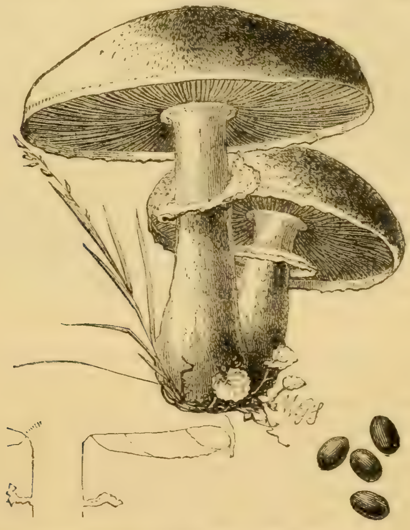
THE COMMON MUSHROOM.

Agaricus campestris (True Meadow Mushroom).

The common meadow mushroom varies considerably, but "common to all are a fleshy *pileus*, which is sometimes smooth, sometimes scaly, in colour white, or of different shades of tawny, fuliginous, or brown; *gills* free, at first pallid, then flesh-coloured, then pink, next purple, at length tawny-black; the *stem* white, full, firm, varying in shape, furnished with a white persistent ring; the *spores* brown-black, and a volva which is very fugacious."—*Badham's Esculent Funguses of England.*

There is scarcely any one in England who does not feel himself competent to decide on the genuineness of a mushroom; its pink gills

easily distinguish it from a kindred fungus, *Ag. arvensis*, the gills of which are of a flesh-coloured grey, and out of the pickings of ten thousand hands a mistake is of rare occurrence ; and yet no fungus presents itself under such a variety of forms, or such singular diversities of aspect. The inference is plain ; less discrimination than that employed to distinguish this would enable anyone who should take the trouble to recognise at a glance many of those esculent species, which every spring and autumn fill our plantations and pastures with plenteousness. Neither is this left to be a mere matter of inference ; it is corroborated in a singular manner by what takes place at Rome ; there, whilst many hundred baskets of what we call toadstools are carried home for the table, almost the only one condemned to be thrown into the Tiber, by the inspector of the fungus market, is our own mushroom ; indeed, in such dread is this held in the Papal States, that no one knowingly would touch it. " It is reckoned one of the fiercest



Agaricus campestris (the True Meadow Mushroom). Pastures, autumn ; colour, white or pale brown ; gills, salmon, at length black ; diameter, 3 to 6 inches. The spores are magnified 700 diameters.

imprecations," writes Professor Sanguinetti, " amongst our lower orders, infamous for the horrible nature of their oaths, to pray that one may die of a *Pratiolo ;* " and although it has been some years registered among the esculent funguses of Milan and Pavia (on the authority of Vittadini), it has not yet found its way into those markets. Mr. Worthington G. Smith, in his " Mushrooms and Toad-stools," qualifies this statement of Dr. Badham.

Agaricus campestris is not generally appreciated in Italy, and indeed

is seldom eaten, and never appears in the markets, for the simple reason that there would be no sale for it. There is an edict in existence ordering certain fungi to be thrown into the Tiber, but it is now and has long been altogether effete; and whilst there is an abundance of *A. Cæsareus* (avowedly the most delicious of all fungi) for the markets of Italy, it is not to be expected the consumption will be given up for another and little known species.

The Modes of Cooking this Species.—"The mushroom, having the same proximate principles as meat, requires like meat to be cooked before these become changed. The *Ag. campestris* may be prepared in a great variety of ways: they give a fine flavour to soup, and greatly improve beef-tea; where arrowroot and weak broths are distasteful to the patient, the simple seasoning of a little ketchup will frequently form an agreeable change. Some roast them, basting with melted butter and white (French) wine sauce. In patties and *vols-au-vent* they are equally excellent; in fricassées, as everybody knows, they are the important element of the dish.

Mushrooms à la Crême.—Trim and rub half a pint of button mushrooms, dissolve two ounces of butter rolled in flour in a stewpan; then put in the mushrooms, a bunch of parsley, a teaspoonful of salt, half a teaspoonful each of white pepper and of powdered sugar, shake the pan round for ten minutes, then beat up the yolks of two eggs, with two tablespoonfuls of cream, and add by degrees to the mushrooms; in two or three minutes you can serve them in the sauce.

Mushrooms on Toast.—Put a pint of mushrooms into a stewpan, with two ounces of butter rolled in flour; add a teaspoonful of salt, half a teaspoonful of white pepper, a blade of mace powdered, and half a teaspoonful of grated lemon; stew till the butter is all absorbed, then add as much white *roux* as will moisten the mushrooms; fry a slice of bread in butter, to fit the dish, and as soon as the mushrooms are tender serve them on the toast.

To Pot Mushrooms.—The small open mushrooms suit best for potting. Trim and rub them; put into a stewpan a quart of mushrooms, three ounces of butter, two teaspoonfuls of salt, and half a teaspoonful of Cayenne and mace mixed, and stew for ten or fifteen minutes, or till the mushrooms are tender; take them carefully out and drain them perfectly on a sloping dish, and when cold press them into small pots, and pour clarified butter over them, in which state they will keep for a week or two. If required to be longer preserved, put writing paper and melted suet over the butter.

THE TRUFFLE.

The Truffle (*Tuber cibarium*) grows under ground, a few inches beneath the surface. Truffles are not common in England, though occasionally found. They are imported chiefly from Perigord, and they are also abundant in Piedmont. They like dry, light soils, and are found at the roots of oak and chestnut trees. Dogs are taught to find them by scent, and show where they are by scratching the ground; or even will

dig them up. They are collected between October and January. When they are quite mature they become gelatinous, and gradually dissolve away.

Truffle Dog.

The truffle is about the size of a hen's egg, and has no roots or fibrils; the skin is blackish or dark grey, with small projections like warts on it. The flesh is greyish white or blackish with black or brown veins. They are very expensive to purchase.

They are much used for flavourings.

Truffles are found in England in Hampshire, Wilts, and Kent. They are in season all the winter, from November to March.

Truffles.

Time, 1 hour or more.

Clean the truffles well by washing them in several waters and removing the earth with a brush till they are quite free from it; butter some pieces of white writing-paper and wrap each truffle in it. Bake them in a hot oven for an hour at least. When they are done remove the papers, wipe the truffles, and serve them in a hot napkin. Or,

They may be cut in slices, seasoned with pepper, salt, garlic, and pounded mace, and baked for about an hour in a quarter of a pint of the best salad oil. When they are done squeeze a lemon over them.

To Boil Fresh Truffles.

Take twelve large truffles, pare the outside skins off very thin, wash them, and put them into a stewpan that will just hold them, and cover them with half white wine, half water, two or three cloves, a little salt, and a quarter of a blade of mace. Cover them close, and boil them gently for an hour, then fold a napkin, lay it in a dish, and serve the truffles on it.

Fresh Truffles Stewed.

Pare off the outside from six or eight large green truffles, cut them in thin slices, and put them into a stewpan with half a pint of gravy, a glass of white wine, sweet herbs tied together, pepper, salt, and mace. Cover them close, and let them simmer very slowly for one hour, then add a piece of butter mixed with flour. Stew it until thick, and squeeze in the juice of half a lemon, crisp the top of a French roll, put it in the centre of a dish, take out the bunch of sweet herbs, and put the truffles over the roll.

TO PRESERVE VEGETABLES FOR WINTER USE.

Green stringed beans must be picked when young; put a layer three inches deep in a small wooden keg, or half-barrel, sprinkle in salt an inch deep, then put another layer of beans, then salt, and beans and salt in alternate layers until you have enough; let the last be salt; cover them with a piece of board which will fit the inside of the barrel or keg, and place a heavy weight upon it. They will make a brine.

When wanted for use, soak them one night or more in plenty of water, changing it once or twice until the salt is out of them, then cut them and boil the same as when fresh.

Carrots, beans, beetroots, parsnips, and potatoes keep best in dry sand, or earth, in a cellar; turnips keep best on a dry cellar bottom, or they may be kept the same as carrots, etc. Whatever earth remains about them when taken from the ground should not be taken off.

When sprouts come on potatoes or other stored vegetables, they should be carefully cut off.

The young sprouts from turnips are sometimes served as a salad, or boiled tender in salt and water and served with butter and pepper over.

Celery may be kept all the winter by setting it in boxes filled with earth; kept in the cellar, it will grow and whiten in the dark. Leeks may be kept also in this way.

Cabbages set out in earth, in a good cellar, will keep good and fresh all the winter. Small close heads of cabbage may be kept many weeks by taking them before the frost comes and laying them on a stone floor; this will whiten them and make them tender.

Store onions are to be strung and hung in a cold, dry place.

Pumpkin may be kept for use thus:—Cut it up, take off the skin, and take out the seeds; put a teacup of water to a common-sized pumpkin and stew it to a mash over a slow fire; let it dry as much as it will without burning; then take it up, spread it in pans or make it into thin cakes, and dry it in a hot sun or cool oven after baking. When wanted for use, stew

it in milk or pour hot milk over it, and let it dissolve : then add eggs for pies. Pumpkins may be kept for a long time on frames in a good dry cellar, or they may be cut up and dried the same as apples ; they are then to be stewed with very little water, and used the same as fresh pumpkin.

Parsley should be cut when tender and a delicate green ; then pack it down in sweet butter ; one pound of butter will be enough for a quarter of a peck of parsley. This butter may be used for melted butter, or sauce, or for frying, or for fricassee. In this way parsley may be kept perfectly green and fresh all the winter.

Green vegetables are good in proportion as they are young and fresh gathered. Spinach, cucumbers, new potatoes, beets, and turnips should be put in cold water sometime before dressing.

SEAWEEDS.

Marine Algæ.

The seaweeds on our coasts are comparatively nutritious food. In a moderately dry condition they are said to contain from 18 to 26 per cent. of water, $9\frac{1}{2}$ to 15 per cent. of nitrogenous constituents, and about 66 per cent. of starchy matter and sugar. They are consequently shown to be richer in nitrogen than oatmeal or Indian corn.

The edible seaweeds are, Ulva latiforina, Porphyra laciniata, Condrus crispus, Laminaria digitata, Laminaria saccharina, and Alaria esculenta.

Ulva Latissima

Is a deep green weed, covering the stones as well as the rocks as the tide recedes, called by fishermen "oyster green," because employed to cover oysters. It is also called *laver*, as it is used by epicures instead of the true laver, when *Porphyra* cannot be procured, but it is by no means so good.

Porphyra.

(From a Greek word signifying "Purple.")

Generic character.—Delicately membranaceous, flat, purple.

Porphyra is also called *Laver* and *Sloke.* It is a favourite dish with some people, stewed for several hours until quite tender, and eaten with pepper, vinegar, and butter ; others prefer it cooked with leeks and onions, or pickled and eaten with oil and lemon-juice. It does not look inviting and the taste is peculiar, but is very wholesome, and will keep a long time in closed tin vessels ; it is therefore valuable in long sea voyages.

Chondrus.

(Name signifying "Cartilage," from the toughness of its frond.)

Generic character.—A flat, cartilaginous frond, divided into branching lesser fronds of purplish or livid red colour.

Fructification.—1. Tubercles, or warts, composed of radiating threads, whose lower joints transform into spores. 2. Tetraspores collected into *sori*, immersed in the substance of the frond.

Chondrus Crispus.

In deep pools between half-tide and low water we shall find abundance of this seaweed, better known as *Irish moss*, or *Carrageen moss*, sold once as high as 2*s*. 6*d*. per pound, whilst in repute with physicians as a light and easily-digested food for invalids. This plant varies exceedingly in size and colour: in shallow pools, small, pale, and stunted; whilst in the shadow of a great rock, or down at the bottom of a deep pool, it has purple red and reddish-green thick fronds in dense masses. Carrageen Moss has been recently prepared and sold for making a cheap and nourishing blancmange.

Laminaria Digitata,

Called *Sea-girdles*, in England; *Tangle*, in Scotland; *Sea-staff*, *Sea-wand*, *Cows'-tails*, and *Red-ware* in the Orkneys. These great thick stems are cut up by the fisher-boys as handles for knives or hooks. When it is fresh the blade is stuck in, and as the stem dries it hardens, contracts closely and firmly, embracing the hilt of the blade. It takes some months to be quite firm, and then is hard and shrivelled, very like hart's-horn.*

"Look reverently at it," says Mrs. Lane Clarke, in her charming "Common Seaweeds." "Do you know that a little slice under the microscope will show you a tissue of delicate cells in which God has stored up one of the most precious remedies for suffering mankind? that He has given the *Laminaria*-stem power to abstract from the sea a precious substance called *Iodine*—that which alone can relieve the pale, sad sufferer from scrofula, reduce the swollen glands, check the ravages of cancer, act on the torpid liver, ease the racking pains of rheumatism, give the flush of health to the wasted weary invalid? Yes—this is hidden in that rough brown stem, brought out by fire in the kelp-kilns of Ireland and Scotland. Another use is its importance in the manufacture of glass: our fragile beautiful glass springs from the old brown seaweed.

"Some shipwrecked sailors, making a fire with the dried weed amidst fine river sand, found the strange transparent substance in the ashes which gave the first hint of our window panes. What should we have done for soap without those sticks of tangle? And do we remember that iodine, like the violet mist of the Arabian tales, rises from the burning kelp—a genie whose power gives back the lost, the absent, the beloved? Did not the calotype, the daguerreotype, owe their birth to this subtile essence, compelling the sun itself to be a portrait painter?

"Well may those banners float out upon the sea, and well may we ponder on the tangled fronds cast up by the storm. There is subject for a long lesson and for a song of praise in the weather-beaten stems of old *Laminaria Digitata*."

Laminaria Saccharina.

A single, smooth, brown frond, clear olive and glossy, with a conical root of twisted fibres. It well deserves its name "Saccharine," from the

* "Common Seaweeds." By Mrs. Lane Clarke.

abundance of sweet *mannite* or manna which is secreted in its cells. This was discovered by Dr. Stenhouse some years ago: he took a quantity of this seaweed and macerated it in a particular way called "digesting" in hot water, which formed it into a brownish sweetish mucilage. When evaporated, it left a considerable quantity of saline semi-crystalline substance. This was reduced to powder and treated with alcohol, by which a considerable portion of it was dissolved. This solution yielded, on cooling, large hard prisms of fine silky lustre, very beautiful, purely white as loaf sugar and almost as sweet. This is *mannite.*

Alaria Esculenta.

(Name from *ala*, "a wing," in allusion to the winged leaflets at the base of the frond.)

This beautiful plant is abundant on the northern coasts of England and Scotland, and extends throughout the whole of the Northern and Pacific Oceans. It flourishes in the deepest water and on the most exposed rocks; the roughest sea seems to be its chosen playfellow, though the delicate fronds are worn and torn by the rude waves, and we rarely find a specimen in a perfect state. The colour is clear olive yellow; the root is a mass of round strong branching fibres, the stem as thick as a small goose-quill, naked in its lower part for the length of two to four inches, then clothed with leaflets without a rib, four inches long, after which the frond begins, and varies from three to *twenty* feet in length, the margin plaited and split here and there like a frond of hart's-tongue fern. The fructification is microscopic, formed on the leaflets, which appear, when in fruit, as if partially covered with a brown crust. This crust consists of dense masses of slender transparent spore-cases, on a stalk containing four spores set in a cruciform manner.

The plant is eaten in Ireland, Scotland, Denmark, and the Faroe Islands, and has various household names—"Badderlocks," "Henware," "Honeyware," and "Murlins." Four other species are natives of America and of Asia.

To prepare seedweeds for food they must first be steeped in water, to which add a little carbonate of soda; this will remove saline particles and take off their bitterness. Then stew them in water and milk till they are tender. Serve them flavoured with pepper and vinegar.

FRESH FRUITS.

All fresh fruits contain a mixture of vegetable acids, with more or less sugar and mucilage. They are mostly cooling, refreshing, and wholesome, but to this stone fruits are in many cases an exception. Peaches, nectarines, and apricots are tolerably wholesome. Cherries and plums are indigestible, and plums are apt to give diarrhœa.

"Fruits," says Dr. Cameron, "are used as a staple food in many warm countries; but in most parts of Europe they are regarded chiefly in the light of luxuries. Deprived of their stones or seeds, they contain often not more than five per cent. of solid matter. They are very poor

in albuminoids ; but they are usually rich in sugar, and many of them contain much acid. There is the greatest variation in the relative amounts of pectose, sugar, and acid in edible fruits. Berries contain, as a rule, more acid than stone fruit. The grape contains from thirteen to twenty per cent. of sugar ; the cherry only one and a half per cent. In the peach there is about nine per cent. of soluble pectin and gum, whilst the gooseberry includes only two per cent. of these bodies. In the common fruits the percentage of free acids varies from a mere trace to about three per cent. The pear is almost wholly free from acids, whilst the currant often contains three times as much free acid as sugar. The grape is probably the best fruit adapted for the sick. As heat-and-force producing foods, five pounds and a half of grapes, six pounds and two-thirds of apples or cherries, ten pounds and three-quarters of currants, and twelve pounds and one-third of strawberries are equal to one pound of starch. The dietetic value of the fruits is chiefly due to their fine flavour and their abundance of saline matter.

Quinces.

In season : October to November.

Quinces improve the flavour of apple tarts, and make excellent marmalade, resembling Guava jelly in flavour.

Medlars.

In season : November to December.

Medlars are never eaten till they are in a state of decay ; they are not much in demand.

Apples.

In season : *non-keeping*, July to September ; *keeping*, October to May.

The apple is the most useful of fruits. It supplies the cider counties with their ordinary beverage, and, cooked, furnishes us with an excellent food for old people and children. Every housemother will value the apple, and knows well its uses. Apples may be kept on shelves with straw under and over them, nicely covered. They must not touch each other, and should be often turned and examined. They must not be left in too cold a place as they will freeze, and if they thaw in the light are apt to decay. Keep them, if possible, *not* frozen. They should also be kept in a distant part of the house, or an out-door shed or room, as the smell of kept apples is extremely disagreeable and penetrating. There are many good keeping apples. The French crab has been known to keep for three years. The golden reinette and old nonpareil keep well.

Apples and pears are better kept between two layers of *cotton wool*—this is the American mode of keeping them. Choose apples by weight ; the heaviest are the best, and large apples save the waste of peeling and coreing.

Dessert Dishes of Apples.

Take twelve large green apples, green them as for preserving, and put them on a tin plate or dish; whisk the white of six eggs to a *very* stiff froth, rub them over with it, sift loaf sugar over them, and put them in the oven until they look bright and sparkle like frost; then take them out and arrange them carefully in the dish you intend to serve them on, pour some good custard round them, and stick a flower on every apple.

Apple Love-Knots.

Take the pulp of the apples after the juice has been taken from them, rub them through a sieve, weigh it, and put it into a pan, stir it well over the fire until it boils, then put to it half the quantity of white sugar sifted; let it come to a boil; then pour it on a large flat dish, and run it about the thickness of a crown piece, put it into a cool oven, and when dry cut it into long strips with a paste cutter and twist them into knobs. Put them in a tin or glass in a very dry place. You may put cochineal to some of the strips.

Ripe Pears.

In season: *non-keepers*, Sept. and Oct.; *keepers*, Oct. to Feb.

Constituent parts in 1lb.

	Oz.	Grs.		Oz.	Grs.
Water	13	184	Woody fibre	0	154
Sugar	1	368	Gum	0	147
Albumen	0	14	Mineral ashes	0	7

The pear is a very delicious fruit, and by extreme cultivation and care is produced of great size and delicious flavour. There are an immense variety of pears for eating and keeping. Pears should be covered with paper and hung up by their stalks so as not to touch each other. It is a good plan to cover the tip of the stalk with sealing-wax as we do to natural flowers for wearing in the evening; or wrap them in a layer of cotton, but never suffer them to touch each other.

Strawberries.

In season: June and July.

This delicious fruit received its name from the practice of the people in tying them *down straws* as cherries were often sold tied down sticks, The strawberry grows wild in many parts of England in the woodlands, but our cultivated varieties have many of them been imported from other lands. This fruit makes a delicious preserve, and is eaten fresh as a dessert fruit.

Cranberries.

In season: *fresh*, Sept. and Oct.; *imported*, Nov. to Jan.

The Cranberry grows best on the muddy margin of a pond, or in bog earth. It is a native of England and all the north of Europe, but American

cranberries are the best ; the flavour is a pleasant acid. It is used for tarts, but is not so common as the garden berries are. It is also preserved, and is imported during the winter months.

Barberries.

In season : July and August.

The Barberry or berberry is of three kinds—the common red, the stoneless, and the sweet. The barberry makes an excellent preserve, and is a pretty breakfast or dessert dish. (*See* plate.)

A Pretty Dish of Barberries.

Select the finest barberries, taking the largest bunches to preserve whole. Divide the fruit, pick *half* of them off their stems ; put them into a preserving pan with sufficient water to make a syrup ; boil them till they are soft ; then strain off the juice, and to every pint of syrup put a pound and a half of pounded loaf sugar. Boil and skim it well, and to every pint of this syrup put half a pound of barberries tied in bunches. Boil them in it till they look clear, then put them in glass bottles for use, tied down with paper dipped in brandy. When you wish to use them make a mound of fresh moss and stick them over it by their stems. This dish is used for ornamenting a supper or breakfast table.

Currants.

In season : July and August.

Currants belong to the same genus of plants as the gooseberry. They are red, white, and black. The white and red serve for dessert fruits ; the black is used exclusively for pies, puddings, and jams. Crystallized currants in moss are an elegant dessert dish. Take some of the finest bunches of red and white currants. *Well* beat the whites of three or four eggs, and mix with the stiff froth a quarter of a pint of spring water. Dip each bunch of currants separately into the egg water. Drain them for a minute, holding them by the stems ; roll them in finely-powdered loaf sugar ; repeat this till you get *enough* sugar on them. Lay them on white paper to dry before the fire. The sugar will then crystallize. Make a mound of moss, and stick them in it by the stems. (*See* plate.)

Raspberries.

In season : July and August.

Raspberries are called travelling plants, because if left alone they run along in suckers to a considerable distance, thus propagating themselves. The best are the red and yellow Antwerp. The raspberry belongs to the same genus as the bramble or blackberry. Raspberries are eaten in tarts with red currants, or alone, preserved, or made into raspberry vinegar—an excellent remedy for sore throat.

Raspberries and strawberries will remove tarter from the teeth.

Gooseberries.

In season : *green*, June and July ; *ripe*, August and September.

Constituent parts in 1lb.

	Oz.	Grs.		Oz.	Grs.
Water	13	0	Sugar	1	0
Dextrin	0	56	Malic acid . . .	0	168
Albumen	0	63	Citric acid . . .	0	21
Woody fibre . . .	1	108	Lime.	0	21

The Gooseberry is a common and very useful fruit. It will keep well, bottled green, or it makes a delicious preserve ; it can be used for tarts also while unripe, and for fool. Gooseberry bushes should be in every poor man's garden.

The skin of the gooseberry being very indigestible is never swallowed. Gooseberries are useful for cooling the system ; the acid in them is very wholesome.

The small hairy sort of gooseberry is best for preserving. The large yellow and old-fashioned red gooseberry are best for dessert.

The gooseberry is very good food ; *perfectly dry* it is nearly as nourishing as wheaten flour.

The Peach and the Nectarine.

In season : August, September, and October.

Constituent parts in 1lb.

	Oz.	Grs.		Oz.	Grs.
Water	11	431	Dextrin (gum) . .	0	357
Malic acid . . .	0	126	Ashes	0	14
Colouring matter .	0	78	Sugar	2	241
Albumen	0	12	Cellulose	0	123

The Peach is supposed to be a native of Persia, and was introduced into England about the middle of the sixteenth century. The peach and the nectarine are only varieties of one species of almond. The two fruits have been known to grow on the same tree without grafting. Both are divided into two kinds : the free stones, the flesh of which parts readily from the stone ; and the cling stones, the flesh of which adheres to the stone. The earliest peach is the Red Nutmeg, which ripens in July. The Grosse, Mignonne, Belgarde, and Barrington are good peaches.

The best nectarines are the *Ebruge*, the *Violette hâtive*, and the white nectarine. These fruits are very wholesome.

The Apricot.

In season : *green*, May ; *ripe*, July and August.

The Apricot is a native of America, introduced in 1562. Its culture is the same as that of the peach. The fruit is suffered to form, and is then thinned out while it is green, in May or the beginning of June. *Green*

apricots make delicious tarts, and are therefore not wasted. The apricot makes also an excellent jam. The best for preserving are the Brodie; the Moorpont are best for table. Soap-suds poured round the root of the apricot tree is believed to improve the fruit.

Beignets d'Abricots.

Split some apricots in half, remove the stones and skin, roll each half in powdered loaf sugar, dip in butter, and fry.

The Plum.

In season: August and September.

An indigestible stone fruit, which, however, makes excellent jam, and good tarts; cooked, it is wholesome.

The Cherry.

In season: *eating cherries*, June and July; *morella*, September.

The Cherry is also indigestible when not cooked. It is said to have been brought to England by the Romans, Lucullus having imported it to Europe from the countries on the Black Sea. It is excellent in brandy, and contains itself a strong spirit which may be extracted. A relative of the writer once achieved this manufacture. He had a quantity of morella cherries put into a large earthenware bread pan, with their equal weight of large lumps of white sugar. As it was impossible to stir this mass, two of the men servants rolled the pan from side to side, thus the juice was extracted. It was left to ferment, and became a cherry-flavoured spirit much stronger than cherry brandy generally is; the cherries were bottled with it. Cherries make good tarts, and are a pleasant fruit for the table.

Pickled Cherries.

Take three pounds of morella cherries, one and a half drachms of mace, one and a half drachms of white pepper, one and a half drachms of cloves, one and a half drachms of cubebs, one pound of loaf sugar. All the spices are to be bruised. Boil the bruised spices in four pints of white vinegar, and pour it warm over the cherries. Cut off half their stalks, and prick each cherry in three or four places. The cherries must be pickled when ripe, and will be ready for use about Christmas.—*Food Journal.*

The Fig.

In season: September and October.

The Fig will grow and bear well in any soil it likes. It thrives and bears well in London and the neighbourhood. The fruit is delicious and wholesome. The preserved figs eaten in England are imported from Smyrna and the Levant. The fig is exceedingly nutritious; it contains nearly as much gluten as wheaten bread, and is twenty-seven per cent. richer in starch and sugar. Any poor man who can grow a fig-tree near

his home will find its fruit help to nourish and sustain his children; yet, strangely enough, there are places in rural England where the poor will not eat figs, but give them to their swine as food.

Mulberries.

In season: September and October.

There are three distinct species of Mulberry—the white, the black, and the red. The white mulberry is the tree on which the silkworm lives. It is scarcely ever grown in England.

The black mulberry is said to be a native of Persia, but was early brought to Europe, and was introduced into England long before 1573, as many large trees were then in existence in our country. The leaves of the black mulberry—the one generally found in our gardens—are not good for silkworms, nor are those of the red mulberry, the fruit of which is not good. Only lettuce leaves should be used for silkworms in England. The mulberry is later in coming into leaf than any other tree, but when its buds once open the leaves expand, and the fruit forms very rapidly. It needs very little care from the gardener, and *no* pruning. The fruit drops off as soon as it is ripe; therefore it is usual to plant the tree in the centre of a soft lawn, that the berries may fall without being bruised. The juice of the mulberry extracted as a syrup is good for colds and sore throats.

NUTS.

In season: *hazel nut* and *filbert*, September and October.

Nuts are an indigestible food, full of oil, and valuable rather as a source of pleasure by affording us the delightful amusement of Nutting than for any other use they may be to us. The hazel nut is a native fruit.

The filbert is only a variety of the common hazel. It is supposed to derive its name from the words "full beard," applied to it at first on account of the length of its husk. The best nuts grow in Kent. Filberts are reared in orchards, also about Maidstone and elsewhere: they are trained with short stems like gooseberry bushes.

Filberts may be kept for two years by packing them when quite ripe and dry, in their husks (in which they are always served), in earthen jars. A layer of salt must be spread over the fruit, and the jars must be tied down closely with brown paper. They must be kept in a cold place. If they get black and mouldy-looking they may be renovated before using by putting them on a strainer or colander, and shaking them gently over a chafing dish of red-hot charcoal over which a little powdered sulphur has been thrown; the fumes will restore their appearance and render them fit to send to table.

The Almond.

The Almond is grown for its kernel also, and may be called a nut, but it is in fact a peach tree. Almond trees are cultivated in England only for their flowers—the fruit is imported from Malaga.

The Chestnut.

Imported : September and October to December.

There are two kinds of chestnuts—the sweet or Spanish chestnut, and the horse-chestnut. The sweet chestnut (*Castanea vesca*) of Asia ; it has also been found in the north of Africa and in North America. We call it the Spanish chestnut, because the best chestnuts for the table were formerly brought from Spain.

Chestnut-trees are now grown in England, but the fruit used by us is imported. There are several celebrated chestnut-trees of enormous size and great age. The Castagnà di Cento Cavalli, on Mount Etna, is famous for its great proportions, and also the Tortworth chestnut in England.

In the south of France and north of Italy the nuts serve as food in place of bread and potatoes. Chestnuts are dried and laid by for winter use. There is no doubt that chestnut-flour would make a palatable bread. Chestnuts are used in *Galette*, *Polenta*, *Maroon glacé*, and in many other ways.

For dressing them as a dessert fruit, for stuffing turkeys, etc., receipts will be found in Warne's "Model Cookery Book."

The Walnut.

In season : *fresh*, September and October ; *for pickling*, July.

The Romans called this fruit the "Nut of Jove;" the Greeks dedicated the tree to Diana, and held festivals under its shade. With us, it is associated with pictures of rural life and repose ; for of old the walnut-tree flourished on many a village green and by many a cottage door.

Our readers have, doubtless, heard the old adage :—

"A woman, a spaniel, and a walnut-tree,
The more you beat them the better they be."

A third of truth is certainly contained in it, for beating a walnut-tree really *does* improve it, by breaking off the points of the too luxuriant shoots, and making them send out the short spurs which alone produce the nut. We may add, that *pruning* answers the same end. Walnuts are an excellent nut, and the green walnut makes a good pickle. They are *best* when eaten just as they fall from the tree, when their green envelope breaks, and the ripe nut will open on the pressure of finger and thumb ; but they will also keep well for some time.

A decoction of the leaves and husks of this tree will protect plants from insects if sprinkled on their leaves. It is also a powerful dye.

If walnuts become shrivelled, soak them in hot milk and water for seven hours before sending them to table. This will make them plump up and peel easily.

Grapes.

In season : *forced*, May to September ; *open air*, September to November ; *foreign*, November to May.

Constituent parts in 1lb.

	Oz.	Grs.		Oz.	Grs.
Water	10	222	Albumen	0	158
Glucose or grape sugar	1	316	Tartaric acid	0	50
Gum	0	79	Ashes	0	50

The Grape is the most wholesome of fruits, and a grape diet has of late years been recommended as a cure for consumption.

The grape is chiefly cultivated in hothouses, and attains great perfection in them under skilful culture. It grows small in the open air, though we have tasted very sweet small grapes from open-air vines.

Grapes are also imported, and can be had at a moderate price in the winter. Cut bunches of grapes should be hung up in loose bags of tissue paper till required. If they have been kept long, clip the stalk of the bunch and put it into a wineglass of claret, or port wine ; the wine drawn up by capillary attraction will refresh the grapes for eating.

Melons.

In season : *forced*, July to September : *foreign*, July to September.

The gourd tribe are remarkable for the water they contain. The melon contains 94 per cent. of water. They are the fruits of hot dry climates. In our cold lands they are less needed, and tax the digestion of a weak stomach. Eaten with pepper instead of sugar—an Asiatic custom—the melon is not unwholesome. It makes a delicious preserve. The imported Spanish melon, of great size, may be bought for about 2*s.*

Pine Apples.

In season : *forced*, June to August ; *foreign*, all the year, nearly.

A very expensive hothouse fruit, but to be bought cheaply enough—for about 1*s.* 6*d.* to 2*s.* or 3*s.* from the fruit shops. The cheap pines are imported from the West Indies.

Pine-apple preserve is excellent, but the fruit is not easy of digestion.

Flavour of Fruit.

To obtain the full, true, delicious flavour of a strawberry or peach, gather the fruit one day in advance and shut it up closely in the fruit-room, and it will then be fit for the dessert and a credit to the cultivator. A second-class fruit prepared by this course of procedure will actually surpass a first-class fruit eaten freshly gathered ; yet the current notion is, that soft fruits cannot be too fresh, and that the keeping of them deteriorates their flavour.—*Gardener's Magazine.*

Cotton as a Preservative of Fruit.

It is not generally known that common raw cotton is one of the best and most simple means of preserving fruit for a long while. In America it is in general use for keeping grapes fresh all the winter. The method employed is as follows :—The bunches are gently laid between a layer of cotton in a glass or earthenware jar. The jar is then corked down and the corks dipped in melted resin.

THE STORE-ROOM.

A large airy, cool and dry store-room is a great boon—a small airy closet will, however, suffice if a large one is not to be had. Shelves, hooks and nails in the walls, or on the edges of the shelves, are essential ; a few little nets for hanging lemons, earthenware jars and tins, are also required.

A book and pencil should be kept in the store-room ; in this book every article purchased should be entered, with its date and price on one page, " taken out," should head the other page ; and on it should be entered everything given out of the store-room.

The cook should be supplied, *once a week*, with the ordinary things required—such as kitchen tea and sugar, rice, candles, soap, etc. etc.—in fact all she can possibly want. On that day week she should account for all she has used, and bring any remainders, which can be made up to the average quantity. If the housemother prefers giving out the store-room articles daily, she should still enter them in her book at the time.

In this manner, the consumption of stores will be constantly checked. Say, the housekeeper has given out so many pounds of bedroom candles ; a glance back will show whether they have lasted the proper time, when the housemaid comes to ask for more. Say, that a pound of tea is to last her and the cook a fortnight ; if she asks for more in *ten days*, a glance at the book will reveal the irregularity ; it will also betray too great a consumption of lemons, nutmegs, etc. etc., or any other article.

A store-room should be dry, clean and cool. In the coolest and driest part should be kept the jams, pickles and preserves. Tin boxes must hold biscuits or cakes. Coffee should not be kept in quantities unless it is *unroasted*, which is the best way to buy it ; the berry, if not roasted, will improve by keeping ; if roasted it loses its flavour, even when kept in tins.

Tallow candles should be purchased in March, as they will then have been made in the winter, and will keep well. We have written largely on the subject of candles in " Domestic Science," to which we refer our readers for every information respecting them.

Soap should be bought, for cheapness, by the cwt. if possible ; if not, by the bar ; it should be cut in pieces for use, and put in a drawer, or on the floor of the store-room to dry and harden slowly, which will make it last much longer.

Starch must be kept in a dry place.

Sugar, sweetmeats and salt, must be kept very dry.

Rice, tapioca, sago, etc., must be kept close covered, for fear of insects.

Lemons should be purchased, for keeping, in June or July, when they are cheapest. They must hang in netted bags.

Eggs may be preserved by brushing over with gum, and laying them in a cool place, or they may be washed with quicklime, saltpetre, and an ounce of cream of tartar.

Fresh eggs should have *the date* of their being laid written on them.

The housekeeper should always have also a ball of string, a hammer, nails, a pair of scissors, and a box of gum in her store-room.

Spices must be kept in tins. Pickles and dry preserves and lemon peel in glass bottles, which may be hermetically closed by means of gelatine caps. Gelatine mixed with glycerine yields a compound which is liquid when hot, but becomes solid by cooling, at the same time retaining much elasticity. To apply it, dip the neck of the bottle into the liquid mixture, and by repeating the operation the cap may be made thicker.

The following list and description of the stores which the housewife, (who can afford a full store-room), should provide, may be of use to beginners :—

Stores Required.

Vinegar.	Semolina.	Almonds.
Store vinegars.	Tous les mois.	Raisins.
Salt.	Maccaroni.	Dates.
Mustard.	Isinglass.	Figs.
Pepper, black and white.	Gelatine.	Oranges.
Cayenne.	Common soap.	Lemons.
Curry-powder.	Scented soap.	Tea.
Olive oil.	Starch.	Coffee.
Nutmegs.	Stone blue.	Cocoa and Chocolate.
Mace.	Candles	Sugar, white.
Cloves.	Colza oil.	moist.
Allspice.	Sand paper.	Honey.
Ginger.	Glass paper.	Pickles.
Cinnamon.	Emery paper.	Preserves.
Soda.	Blacklead.	Bottled fruit.
Carbonate of soda.	Fuller's earth.	Sauces.
Rice.	Washing powders.	Candied peel :
Arrowroot.	Currants.	Lemon.
Potato flour.	Prunes and French plums.	Citron.
Sago.	Norfolk biffens.	Orange.
Tapioca.		House-flannel.

Vinegar.

Vinegar (acetic acid) is the acid of malt. It is obtained also from various other sources—from wine, cider, sugar, and wood. Good table vinegar can also be made from the vinegar-plant.

This plant is a kind of fungus growing on wet sugar and treacle, and consists of a gelatinous substance of a pale brownish colour. If placed in a jar with a solution of sugar and water, or a mixture of sugar, treacle, and water, and allowed to remain for six or eight weeks in a kitchen cupboard, the solution will be converted into vinegar ; the change is produced

by fermentation caused by the plant. The plant grows at the same time, perpetually doubling itself when the growth is removed.

It was an observation made by Scheele, but the fact has recently been published as a new discovery, that ordinary brown vinegar will keep bright and clear for any length of time if heated to the boiling-point for a few minutes.

Vinegar is refrigerant and moderately stimulating applied externally.

How to make Vinegar at Home.

Fourteen lbs. of moist sugar, 7 gallons of hot water, 8 quarts of cold water, a toast spread with yeast.

Put the sugar into 7 gallons of water, boil and skim it thoroughly; then pour in the *cold* water. When it is cool put in a toast spread with yeast Stir it for nine days, then put it in a clean nine-gallon cask. Cover the bunghole with a piece of slate, and set the cask in the sun. It will be ready to use in six months.

March is the best time to make it. Cost, 4*s.* 10*d.* the cask, about 6½*d.* per gallon.

To make Cider Vinegar.

After cider has become too sour for use, set it in a warm place; put to it occasionally the rinsings of the sugar-basin or some molasses or any remains of ale or cold-tea; let it remain with the bung open, and you will soon have the best of vinegar.

The following is Dr. Ure's receipt for making Malt-vinegar :—

"One boll of good barley malt properly crushed is to be mashed with water at 160° Fahrenheit. The first water should have that temperature. The second must be hotter than 160°; and the third water, for the extraction of all the soluble matter, may be boiling hot. Upon the whole not more than 100 gallons of wort should be extracted. After the liquor has cooled to 75° Fahrenheit, three or four gallons of beer yeast are poured in and well mixed with a proper stirrer. In thirty-six or forty hours, according to the temperature of the air and the fermenting quality of the mash, it is racked off into casks, which are laid upon their sides in the fermenting apartment of the vinegar-works, which should be kept at a temperature of 70° at least; in summer by the heat of the sun, or by stoves. The bunghole should be left open, and the casks should not be full in order that the air may act over an extensive surface of the liquor. It would be proper to secure a free circulation of the air by boring a hole in each end of the cask near its upper end."

How to make the Vinegar Plant Grow, and Vinegar from it.

Get a quarter of a pound of sugar, and the same of treacle; add to them three pints of water; boil all together and put in a pan; cover it over with net, and set it in a warm place for six weeks, in which time the plant will be formed from the sugar and treacle. You may then remove the plant and boil the vinegar: get a fresh supply of sugar, water, and treacle, put your plant on it, and proceed as before with a plant. The vinegar will be made in a month.

How to detect Adulteration of Vinegar by Minerals.

COPPER.—If you suspect copper, dip a clean piece of iron into the vinegar; if copper be in it a rose-colour coating of copper will remain on the iron. If you suspect

LEAD, use bisulphuret of soda. If put in vinegar which contains lead, a white precipitate will remain—sulphuret of lead. If

IRON, prussiate of potash produces a blue precipitate.

There are various modes of making vinegar with acid wines. The most simple and natural consists in placing the wine in a flat tub, and leaving it open and exposed to the air and the sun. In the summer it will require from six weeks to two months, according to the alcoholic strength of the wine, to turn it into vinegar. In the winter, when the influence of the sun is not sufficiently powerful to cause the evaporation of the alcohol in the proportion desired, the temperature must not be below 60° Fahrenheit. To hasten the operation, it is well to use a vessel that has already held vinegar, and then to add to the wine some boiling vinegar, in the proportion of, say, ten parts of vinegar to 100 parts of the wine, leaving the liquid exposed as above stated. Another mode of completely acidulating the wine is to add five per cent. of strong acetic acid to the quantity of wine. Vinegar can thus be obtained in the space of about three weeks. If the wine be red, the vinegar will be red also. When white or slightly coloured vinegar is desired, the extra colouring matter can be taken off by means of animal charcoal. For this purpose, when the vinegar is thoroughly made, a tap is affixed to the cask or other kind of vessel. A funnel of about six inches in diameter is taken, lined with ordinary filtering paper, and filled up with coarse-ground animal charcoal. It is then placed in a bottle or jar under the tap, and the liquid is allowed to drip very slowly through it. When the animal charcoal is so impregnated with the colouring matter of the liquid that it decolorizes it no more, then the funnel must be emptied and replenished with fresh filtering paper and animal charcoal; the vinegar will, however, look better if slightly tinted. The discoloring process can accordingly be regulated.

Store Vinegars.

CAMP VINEGAR.—Two heads of garlic, one ounce of Cayenne pepper, two tablespoonfuls of walnut ketchup, two tablespoonfuls of soy (or instead, six anchovies chopped up), vinegar one pint. Infuse for two months. Strain and bottle.

HORSERADISH VINEGAR is made by scraping up about six ounces of the root, and putting it into three pints of vinegar. Let it stand for a fortnight or three weeks; then strain for use, and bottle.

SHALLOT, ONION, and GARLIC VINEGAR are made in the same way, by putting them into vinegar in the proportion of 1 oz. to 1 pint of vinegar, letting them stand for a fortnight; then straining and bottling.

CHILIS AND CAPSICUMS.—In the proportion of an ounce to a pint of vinegar. Stand a fortnight or a little longer; strain and bottle.

TARRAGON VINEGAR.—To one pound of tarragon leaves, one gallon of white-wine vinegar. The vinegar is made according to the following receipt:—Strip off the leaves just as the plant is going into blossom,

and add the vinegar in the above proportions. Put it into a stone jar to ferment for a fortnight. Then run it through a flannel bag, and to every two gallons of vinegar put one quarter of an ounce of isinglass dissolved in a little cider. Mix it well; let it stand a month; then bottle it and tie it down closely.

CRESS VINEGAR.—Dry and pound half an ounce of cress-seed (the same that you sow with Mustard-seed), pour on it a quart of the best vinegar; let it infuse for ten days or more. Shake it every day.

CELERY VINEGAR.—Half a pound of celery seed, one pint of vinegar, a little salt: or, ten ounces of fresh celery root cut up very small. Put the celery (or seeds) into a jar, boil the vinegar and pour it over them. Set it to cool; bottle it in wine bottles, and cork it down. Let it stand for a month, then strain it into small bottles and cork for use.

CAYENNE VINEGAR.—One ounce of good Cayenne to one quart of best vinegar. Put the Cayenne in a jar, pour the vinegar over it cold; cover it closely, let it stand for a month. Then strain it through muslin and bottle for use.

TOMATO VINEGAR.—Three dozen tomatoes, half a pound of salt, a little mace, cloves and nutmeg, one clove of garlic, half a pint of mustard-seed, two quarts of vinegar. Quarter the tomatoes, but leave the bottoms undivided, rub half a pound of salt over them and place them in a wide-mouthed jar in a cool oven, or by the side of the fire for two days. Add then the garlic, spices and mustard-seed, and pour over all the vinegar boiling hot. Tie a bladder over the jar, and let it stand by the fire for five or six days, shaking it well every day. Put it by in the same jar as long as convenient. When you want to bottle it, press out and strain off all the liquor; let it stand several hours to clear, then bottle it.

The sediment can be used for sauce to cutlets at once.

A GOOD ACID SAUCE.—One quart of vinegar, half a bottle of soy, half a bottle of ketchup, half ounce of Chilis and four or five shallots chopped very fine. Put all into a jar and shake every day for a week, and then bottle for use.

SALT.

Component parts, when pure: 39·4 parts of sodium and 60·6 chlorine.

Salt is absolutely required for the support of health. Upwards of half the saline matter of the blood consists of common salt; the necessity of supplying its daily waste is therefore obvious. It has been known for ages past that without salt man would perish, and in former periods of history a barbarous punishment (entailing certain death) was that of feeding a culprit on food destitute of salt. It is required in the bile and for the cartilages of the body; the digestion would be impaired unless it were supplied, and the cartilages cannot be rebuilt as fast as they waste without its aid.

Table salt is obtained by the evaporation of water from brine springs; it is also dug out of salt mines.

Salt is of great value for the preservation of meat; it prevents the decomposition of flesh at a temperature below 60°, but above that heat it cannot control putrefaction. It is therefore scarcely safe to salt beef or pork in very hot weather *unless ice be used* in the pickling. But even in

the height of summer meat may be safely cured if ice enough is added to the pickle to keep it as cool as 55 degrees.

Meat is salted either by rubbing salt into it with the hand, or by immersing it in pickle or brine. The flesh absorbs the salt and gives out its watery particles in return, which form brine. Sugar is used in addition to salt, and is no doubt a valuable agent in pickling, for this reason—Oxygen is the great decomposing agent, that is, it is oxygen which causes decay. Now carbon absorbs oxygen, and as sugar contains a great deal of carbon it absorbs the oxygen, and thus helps the salt to preserve the meat. These would be about the ingredients of a good pickle : Four and a half pounds of common and fine salt, three gallons of water, one pound of moist sugar, one ounce of saltpetre, half an ounce of salteratus. For many varied and all good modes of making pickle we refer the reader to Warne's "Model Cookery Book."

Salt in store must be kept in a dry place.

Mustard

Is a native of Europe, and was introduced into England before 1548. Our readers may remember how Grumio teased "the Shrew" by proposing "the mustard without the beef;" and how Bottom spoke to Mustard-seed the fairy : "Good Master Mustard-seed, I know your patience well ; that same cowardly, giant-like ox-beef hath devoured many a gentleman of your house ; I promise you your kindred hath made my eyes water ere now." In George I.'s reign, a Mr. Clements prepared and sold Durham mustard, but the condiment had (on the above authority) been long previously in use.

Mustard is of the easiest culture possible. The white mustard, which we eat in its seed leaves with cress, may be raised by spreading the seed in a saucer on wet flannel.

The flour of mustard—mixed for the table—is made from the ground seeds of the black mustard, extensively cultivated in England for that purpose

A good supply of mustard should be kept in the storeroom in the country, as it is a valuable article in cases of inflamation, cold, or poisoning.

The seeds of the black mustard contain a volatile and fixed oil of mustard, and two substances known as myronic acid and myrocene. These substances are not found in white mustard. Myronic acid contains sulphur and nitrogen. Myrocene is an albuminous matter which coagulates in hot water, and is necessary to the formation of the essential oil. Therefore mustard must be always made with *hot* water.

Table mustard mixed with hot water is a strong emetic, and spread as a poultice will relieve cold on the chest, etc. etc.

Mustard owes its peculiar odour, burning taste, and blistering quality to its volatile oil, which resembles that of horseradish.

Pepper.

Constituent parts : Acrid resin—Essential oil—Piperine.

Pepper, unlike the other spices, possesses a nitrogenized principle, called Piperine. Its effect on the human body is the same as that of the

Theine in tea, Caffeine in coffee, and Theobromine in cocoa ; consequently it is extremely wholesome.

Pepper is the berry of the pepper plant known as *Piper nigrum* and *longum*. Black pepper is the entire berry of the *Piper nigrum* ground ; white pepper is the same berry ground without its husk or outer covering. Peppercorns are these berries whole. They are imported from Malabar, Sumatra, and Penang. They should not be too small or shrunk in drying, and should sink in water.

The Piperine is contained in the white or internal structure of the berry.

CAYENNE PEPPER is made from the pods of capsicum plants. This pod consists of an outer skin which contains a principle called *capiscin*, very powerful on the organs of sneezing ; an inner substance, and a number of small seeds. The whole pod is ground up to make Cayenne.

This pepper is more wickedly adulterated than any other article of food. The mixtures with it being red lead, Venetian red, red ochre, vermilion, and common salt. There is no possibility of defending one's self from these poisonous deceptions except by dealing with first-class tradesmen, or by getting friends who go to Africa or the West Indies to bring it home with them. We know a lady who prepares the pepper herself from the pods, and sells it, to the great benefit of her neighbours and the poor. The writer uses it herself in preference to any other.

Dr. Kitchener gives the following receipt for making it :—

"Four hundred large chilies, a fourth part of their weight in salt. Take away the stalks and put the pods into a colander, set it before the fire ; they will take twelve hours to dry. Then pound them to a fine powder in a mortar with the salt. Bottle and keep. This receipt makes a quarter of a pound of Cayenne pepper."*

We think a few dried Capsicums might be added with advantage, but unless home-made Cayenne pepper is procured, the article is scarcely ever pure. Considering its importance as a cure for one kind of sore throat, and its digestive uses, this is much to be regretted.

Curry Powder.

The best and purest is to be bought *only* at Apothecaries' Hall.

Curry powder is adulterated with red lead.

Receipts brought from India for excellent curry powder are given in Warne's "Model Cookery Book ;" we subjoin another original one.

Half an ounce of cayenne, one ounce of mustard, half an ounce of black ground pepper, half an ounce of salt, a quarter of a pound of turmeric, a quarter of a pound of coriander seed, one ounce of pounded cinnamon, one ounce of ground ginger, two ounces of fenugreek, and a quarter of an ounce of allspice, mixed.

Olive Oil.

The flask of oil must be kept in the driest and above all *darkest* place in the storeroom, as light injures it very much. Olive oil is demulcent and laxative. It is an antidote to some poisons, and applied warm to the

* One hundred chilies will make two ounces of Cayenne.

skin is an emollient; combined with hartshorn, it is used as an external stimulant. The persecution of musquitoes and of our own midges may be prevented by slightly brushing olive oil over the skin. It is used in cookery for salads, mayonaise and frying fish.

Nutmegs and Mace

Are the fruit of the nutmeg tree, of which there are three species—*Myristica fragrans*, *Myristica fatua*, *Myristica malabarica.* This tree resembles the pear tree. Its fruit is like a large pear in shape, and is smooth externally. The outer or fleshy part is the pericarp. When ripe it separates lengthwise, and within is the seed or nutmeg enclosed in two coverings; the mace fills up the space between the seed and the pericarp. The *true* or best nutmeg is the seed of the Myristica fragrans; an inferior kind called the false nutmeg is procured from the other two species. The true nutmeg is round and of an aromatic smell or flavour; the false nutmeg may be distinguished from it by being longer and paler.*

To Select Nutmegs, prick them with a pin. If they are good, the oil will instantly spread around the puncture.

Mace follows, of course, and is either true or false. The good mace is orange yellow, transparent, and horny; the inferior or false is of a dark red colour, and has little flavour or smell. There is a fixed and volatile oil in the nutmeg which, if the seeds are eaten alone and in any quantity, will produce intoxication.

Cloves.

Constituents: Essential oil—Resin—Tannin—Woody fibre.

Cloves are the fruit, or rather the cup of the unopened flowers of the clove tree, *Caryophyllus aromaticus*, a native of the Moluccas, or Clove Islands. Cloves are shaped like a nail, whence the name, from the French word *clou*, a nail. Good cloves have a strong, fragrant, aromatic odour, and a hot acrid taste, which is very permanent.

Pimento, or Allspice.

Constituents: Essential oil—Gum—Resinous matter—Astringent extract and fatty oil.

Pimento is the berry of the pimento tree, growing in the West Indies.

Ginger.

Constituents: Gum—Starch—Woody fibre—Volatile oil—Acrid resin.

Ginger is the root of a perennial plant called *Zingiber Officinale*, growing in Asia, Africa, and the Tropics of America. The roots are dug up at the end of the first year and prepared for selling. It is sometimes imported from Jamaica, preserved as green ginger, and is very delicious.

Ginger owes its pungency to its volatile oil.

---

* If a nutmeg is grated at the *stalk* end it will be hollow all the way through, while if grated *from the solid* end it will be solid throughout.

Ground ginger is adulterated with sago, wheat flour, cayenne pepper, mustard husks, and turmeric powder.

Ginger makes a milder poultice for face-ache, etc., than mustard, and is of use in cases of flatulency. It is also good for gouty persons.

Preserved ginger is very delicious. It may be well imitated at home by preserving ends of cos lettuce stalks with ground ginger, etc. etc.

Cinnamon.

CINNAMON is the bark of the *Cinnamomum*, a tree cultivated chiefly in Ceylon, and also in Bombay, Malabar, and Java. The three-years-old branches are peeled for the bark, and it is dried in the sun. The flavour of cinnamon is much liked ; a very little of it flavours.

The Cassia—the bark of the *Cinnamomum Cassia*—is sometimes sold for the true cinnamon, but it is not so sweet, and has a slightly bitter taste.

Mixed spice is a compound of ginger, pimento, cassia, etc. etc. It is never required by a good cook, who should be able to flavour more skilfully than this mixture does.

Soda.

SODA, or bicarbonate of soda, is manufactured by the decomposition of common salt. It is used for household and cleansing purposes.

CARBONATE OF SODA is useful for making effervescing draughts and other purposes. It has also the power of altering the colour of plants when it is put round the roots.

Rice.

The constituent parts of rice are in 1 lb.

	Oz.	Grs.		Oz.	Grs.
Water	2	70	Gum	0	68
Gluten	1	17	Fat or Oil	0	48
Starch	11	380	Woody fibre	0	230
Sugar	0	27	Ashes	0	34

Rice is not as nourishing as other cereals, though, of course, its use as food by the populations of Hindostan shows that it will sustain life; but as we have shown, it takes four pounds thirteen ounces to supply five ounces of flesh-forming matter to a working man. Rice makes fat, and it has a tendency to constipate the bowels, consequently it is given in cases of cholera and diarrhœa. The rices are Carolina, from America, Patna, Bengal, Madras, Arracan, and Java. Carolina is much the best; Patna next; Madras rice is the cheapest. It is well not to have too much rice in stock at once.

Ground rice makes nice custard puddings, a good Blancmange, and fritters. It is never used in any other way.

Arrowroot.

Arrowroot is a starch obtained from the roots of many plants.

There is the *Maranta Arundinacea*, *Tacca Oceana*, *Manihot*, and *Curcuma* roots. Of these, the Maranta arrowroot is considered the best, and is sold in England by the name of Bermuda or Jamaica arrowroot.

Arrowroot will not sustain life alone, though it makes pleasant puddings, fritters, a clear jelly, and a milk posset.

Potato flour makes a nice imitation arrowroot pudding, and is much better for thickening gravies than common wheat flour.

The goodness of arrowroot may be tested by letting the transparent jelly made from it stand for twenty-four hours, when, if the jelly becomes thin, the arrowroot is pure. Arrowroot varies greatly in price.

Sago.

Sago is the pith of an Indian palm called *Sagus lævis.* This pith is steeped in water, becomes a paste, and is rubbed, when half dried, through a perforated plate, which causes it to be easily formed into little balls.

Tapioca.

Tapioca is the pith of the Manihot tree, washed like sago, but formed into different shapes from that pulp. It is brought from Brazil and the East Indies. Tapioca is very nutritious and easy of digestion ; boiled in milk, or with fruit, or as a pudding, or in soup, it is equally good and nourishing.

Semolina

Is a preparation of wheat flour—very nourishing.

Tous les Mois

Is prepared from the pith of the *Canna edulis*, but more commonly from wheat flour.

Rice, Sago, or Semolina Pudding.

Boil two large spoonfuls of rice, etc., in milk, with sugar, lemon-peel, or a laurel-leaf until tender. Beat up the yolks of two eggs, and mix them with the rice, etc., and milk when lukewarm. Let it stand until cold, and just before you want to bake it, beat up the two whites to a stiff froth and mix it in the dish with the rice and yolks ; bake it *before* the fire or in a Dutch-oven.

Maizena.

Maizena is a preparation of corn-flour.

Maizena Pudding.

One quart of milk, five tablespoonfuls of maizena, two eggs, essence of lemon or vanilla, sugar to taste ; some candied citron and orange-peel.

Beat thoroughly five spoonfuls of maizena with two eggs and two tablespoonfuls of milk, flavour it with lemon or vanilla ; put the milk over a clear fire, sweeten it to taste, and when on the point of boiling stir in very briskly the maizena, and let it boil a few minutes, stirring it all the time ; place green citron cut into pieces over the bottom and sides of a wet mould ; pour out the maizena, adding pieces of orange-peel as it is poured in. When cold turn it out on a glass dish.

Maccaroni and Vermicelli

Are preparations of wheat flour. The flour is mixed with water and then forced through perforated plates of a larger or smaller size. The maccaroni is forced through large holes—the vermicelli through very small ones. There is also a ribbon-maccaroni manufactured, which is not bad. Maccaroni varies very much in quality.

To Dress Maccaroni.

Put the maccaroni into boiling water, and let it be kept boiling until soft, then let it drain on a sieve, and put it on a dish to serve. Make a sauce with cream, butter, and flour, and grated cheese. Mix all, and pour over the maccaroni, then grate some cheese over the top and brown.

Isinglass.

Isinglass is made from the swimming-bladder of the sturgeon, and from other fish. It is a gelatinous substance, and is imported from Russia, Brazil, and the East and West Indies. Russian isinglass is the best.

Ribbon-isinglass is made from the intestines of the cod.

Gelatine.

Gelatine is extracted from the bones and hoofs of animals, by boiling them at a high temperature. Anything which contains gelatine may be made into it. Gelatine is very low-priced. It will make jellies, etc., quite well. The smell of dissolving gelatine is like boiling glue. The smell of dissolving isinglass is fishy.

If the housewife has any doubt of the genuineness of the isinglass sold to her, the above test is a simple and sure one.

Soap.

This useful article should be bought in quantities ; say, half cwt. or cwt. at a time, if the family be large ; if small, it should be bought by the four bars at once. A bar contains about three pounds of soap. The reason for buying a quantity at once is that it hardens by keeping, and therefore does its work of cleansing without so much waste in the water. The bars should be cut into moderate sized pieces for use with a fine twine, they will harden better than if it be left in the bar. Scented soap should also be kept for use. If *shape* is not an object, *pieces* of scented soap of the best kind may be purchased very cheaply of any of the great manufacturers. These are the bits cut off in forming the pats, which, of course, they quite equal, except in shape. They are sold by the pound. Soap is made of fat, exposed to the action of a caustic alkali, which produces on it a peculiar change called saponification.

Almost every kind of fat or oil has been used, at different times, for soap. Of oils, those of hemp-seed, rape-seed, cocoa nut, beech-seed, poppy-seed, palms, almonds and nuts. Fat of any kind (such as tallow, etc.) is also used

for soaps. The alkalies used to make soap are potash or soda. Yellow soap is made of whale oil, soda and resin; soft soap, of oil and potash; hard soap of oil and soda. Soda-made soap consists of about 61 parts of fat or oil, 8½ of soda, and 30½ of water. Some portion of the water will evaporate if it be kept in a dry place. In common yellow soap, whale oil, or palm oil and resin, are used with the soda. Soap made of tallow and potash consists of about 28 parts of fat, 12 of potash, and 29 of water. This, as we have said, is soft-soap. Mottled soap is made by mixing a solution of the sulphate of iron with common hard white soap while it is still in a melting state. The alkali in the soap decomposes the sulphate, and black oxide of iron is deposited in streaks through the soap.

Brown Windsor is hard white soap coloured with burnt umber and scented.

Glycerine soap is made with hog's lard, oil of almonds, nut-oil, palm-oil, or suet and soda, with glycerine added to it.

Honey soap has no honey in it; it is simply the same compound as glycerine, with the essential oil of citronella added to it.

Marseilles white soap consists of soda and olive oil, with water. Castile soap of the same materials, with more olive oil and soda, and less water. It has also colouring matter in it. These soaps are expensive.

Common soft-soap is made with coarse fish oil; white soft-soap with potash and tallow, as we have before said. Green soap is made with vegetable oils, such as rape- and poppy-seed oil; soft-soap can be made hard by the addition of common salt when it is in process of making.

The best soap for the skin is the very best *yellow* soap; it softens it excessively, and when *rubbed in* instead of being washed off, it is useful as an external remedy for rheumatism, and used to be prescribed by Sir William Fergusson.

Soap is sold—yellow, at about 4½*d.* per lb.; mottled, about 4*d.* per lb.; scented soap is sold by the pat, or bar, 1*s.* per bar, 3*d.* or 4*d.* per pat.

Carbolic soap is a valuable preparation, as it has great disinfecting powers, and should always be used in washing the linen of fever patients. It possesses also great cleansing power without injuring the material on which it is used. Its use is fatal also to house insects. There is also a carbolic toilette soap which is excellent in hot weather for the skin. The Kalydor soap is also very good for the skin.

The following process for making soap is practised by emigrants:—Two or three gallons of clean water are poured upon about a bushel of wood ashes, thoroughly stirred, and the ash is allowed to subside. The liquid, which is now a lye, is drawn off and boiled for two or three hours with fat of any description. At the end of that time the fat will have assumed the consistency of soap. It is allowed to settle, and the liquor is then drawn off, being no longer of any use. The residue, although soft, will answer every purpose for which soap is used.

Starch.

Starch is an important constituent part of food, as it assists, with sugar and gum, in forming the fat of the body, and in carrying on the respiratory process; but, *separately*, it is used for stiffening and glazing muslins, etc. etc., which are thus preserved clean longer, as well as made to

look better. Clear starching was introduced in the reign of James I., and the first clear starchers were Dutch women. The yellow starch, introduced and made fashionable by the infamous Mrs. Turner, who was hung for assisting in the murder of Sir Thomas Overbury in the Tower, went out of fashion at her death, as she was hung in a yellow starched ruff.

Many vegetable substances afford starch; the chief are wheat, rice and potatoes. Arrowroot also makes a delicate but expensive starch. Wheat starch is made by soaking the grain in cold water till the husk separates and the farina is softened—*i.e.*, till the grains are full of milky matter. The mass of grains thus softened is then put under pressure, which forces out the milky fluid. This is let stand for some days. A slight fermentation takes place; the gluten is decomposed and changed into acetic acid and alcohol, while the starch remains undissolved. It is taken out and washed in cold water, then slightly coloured with blue and heated in an oven until it cracks into the pieces in which we buy it.

Rice starch is procured much in the same way, but as it contains almost no gluten it is made more easily.

Potato starch is made by grating raw potatoes into a vessel full of clear water, and after sluicing it well, letting the mass settle. The water is poured off and fresh water added *three times;* then the starch remains at the bottom of the vessel.

Arrowroot starch is made by simply pouring a little boiling water on the powder.

Starch will not dissolve in cold water; it requires boiling water. Its price is from 5*d.* to 8*d.* per lb. It should be kept in a jar, in a dry place.

Stone-blue.

Stone-blue is merely indigo reduced by adding whiting or starch. It is used, tied in a bag, to blue water into which washed linen or muslin is dipped. Powder-blue is smalt mixed with a very little starch.

Candles.

The manufacture and chemistry of candles have already been so fully described in "Domestic Science," that we have little more to add respecting them, except that tallow candles are the better for keeping, and that *winter-made* candles last longer than those made in the summer. Prices of all kinds vary very much. They are chiefly,

Wax.	Belmontine.	Field's Ozokerit.
Sperm.	Price's.	Dips (tallow).

Rock candles and half-hour candles, 1*s.* per box of 60, useful for timing the going to bed of servants and children.

Ozokerit candles are the last novelty. Ozokerit is from the Greek *ozo* "I smell of"—*keros*, "wax." It is a vegetable wax, and in its raw and native state is of a yellowish colour, of light specific gravity, and somewhat fibrous in its structure. It will not burn of itself, but will readily melt on a light being applied to it. On being roughly wrapped around a centre, even in its native state, it easily and readily consumes. In fact, a rude candle can be made of the raw material and a cotton wick. It is found

principally in Austria, Moldavia, the Caucasus, and near the Caspian Sea, where it is obtained in great quantities, being largely used in those countries for illuminating purposes. It was discovered, about two years since, by a Russian military officer, who communicated the fact to M. Gustav Siemssen, who has introduced it into England. These candles are much liked, as they remain hard at a high temperature.

Wax candles which have turned yellow may be whitened by rubbing them with a spong dipped in a little spirits of wine.

Savealls are used by all economical people for burning up ends of candles and saving waste.

Oil.

Colza-oil is that which is chiefly in use in families for the moderator-lamp. It is the oil of the *Brassica Arvensis*, which is grown in France and Belgium. It is pressed from the seed, and purified and whitened by sulphuric acid. It is often adulterated by mixture with the oil of the *Brassica rapus—i.e.*, clarified rape-oil. When pure it does not smoke, and has no unpleasant smell. Both the light and cleanliness of the lamp depend greatly on the purity of this oil.

Petroleum and Paraffin lamps cannot be recommended. They always smell unpleasantly, and the latter are attended with some risk. Insurance offices expect a higher rate of premium where paraffin is used. If, however, it is made use of, it should be *tested* out of doors before it is put into the lamp, by pouring a very little into a flowerpot-saucer and applying a light to it. If it does not explode it may be used.

Sand, Glass, and Emery Papers.

SAND PAPER and GLASS PAPER are made of sand or powdered glass glued on to cartridge-paper. Price ½*d.* per sheet.

EMERY is a stone ground in mills and suspended in water. The finer sort is found in the water drawn off first; the coarser follows. It is glued on paper in the same way as sand and glass, or can be used in the powder. It should be bought at the best shops, as there is great difference in it. Good emery paper will last for two or three cleanings; the bad rubs off the first time. Price ¾*d.* a sheet.

TO MAKE EMERY CLOTH.—Buy some emery powder. By washing in water (as before explained), get the different degrees of coarseness, cover a piece of *thin* cotton cloth with a light layer of glue, sprinkle over it the powdered emery. But it is better to buy the cloth all ready.

TO MAKE GLASS-PAPER.—Take any quantity of broken window-glass, that which has rather a green appearance on the edge is the best, pound it in an iron mortar, then have two or three sieves of different degrees of fineness ready for use when wanted. Take any good tough paper (fine cartridge is the best), level the lumps on both sides with pumice-stone, tack it at each corner on a board, and with good clean glue, diluted with about one-third more water than is used generally for wood-work, go quickly over the paper, taking care to spread it even with your brush; then, having your sieve ready, sift the pounded glass over it lightly, but to cover it in every part; let it remain till the glue is set, take it from the board, shake off the superfluous glass into the sieve, and hang it in the

shade to dry; in two or three days it will be fit for use. This paper will be much better than most of that which you can buy, sand being frequently mixed with the glass, and coloured to deceive the purchaser.

BLACKLEAD is a carburet of iron, and consists of 92 parts of iron and 8 of charcoal. Price 6*d.* per lb. or 10*s.* per cwt.

FULLER'S EARTH is of a greyish brown colour. It is scraped off when required for use, and absorbs grease easily.

WASHING POWDERS are made chiefly of alkalies, and have the effect of pearlash or potash. They remove grease in washing. 1*d.* per packet.

DRIED FRUITS.

Prunes are dried plums. French plums are the *best* dried plums. Prunes are chiefly used for stewing. French plums are fit for dessert.

Normandy Biffens are apples dried in stove heat till they look shrivelled. They are excellent stewed in syrup.

Almonds.

Constituent parts: Gum—Albumen—Sugar—Woody fibre—Fixed oil.

The almonds (sweet and bitter) are the kernels of two varieties of a stone fruit-tree growing in Spain, Italy, and Barbary. An essential oil of a highly poisonous nature is distilled from the bitter almond. Of sweet almonds, the Jordan are thought the best for dessert.

Raisins.

Raisins are simply dried grapes.

Constituent parts of the grape in 1 lb.

	Oz.	Grs.		Oz.	Grs.
Water	10	222	Albumen	0	158
Glucose or Grape-sugar	1	316	Tartaric Acid	0	50
Gum	0	79	Ashes	0	50

Grapes are dried for raisins in the sun or by stove heat. Those dried in the sun—called raisins of the sun—are thought much the best. The common raisins dried in stoves are often very dirty and mixed with much refuse matter. The Sultana is a stoneless raisin—very good in puddings.

There are Muscatels, Smyrna, Valencia, Elemé raisins, and the Sultanas already named.

Currants.

Currants are the small grape of Corinth and the Ionian islands dried. They are very indigestible even cooked. It is cheapest to buy the very best, as the weight of the common ones is affected by the dirt mixed with them.

1. Red Crystallized Oranges.
2. Barberries.
3. Crystallized Currants.
4. Orange Compote.
5. Maizena Pudding.
6. Thatched Pudding.
7. Green Caps.

The Date.

Constituent parts in 1 lb.

	Oz.	Grs.		Oz.	Grs.
Water	3	257	Fat	0	14
Albumen	1	0	Gum	2	330
Fibrin	0	18	Woody fibre	0	140
Sugar	8	21	Ash	0	98

The date has been justly called "the Bread of the Desert," for multitudes of the Arab tribes scattered over the sandy regions of Egypt and Arabia live chiefly on this fruit. It grows amid parched sands and arid wastes; wherever a spring of water appears in the desert, this elegant palm is found, yielding to the wearied traveller both shelter and food.

Preserved Dates are very useful in the English household for dessert, and also for an especially good pudding. Before sending up for dessert they should be put for a few minutes into boiling water to wash them; this plumps them up, and makes them look better. They are very nourishing. Bread and butter and a date or two make a good light supper.

The Fig.

Constituents of 1 lb. *of dried figs:*

	Oz.	Grs.		Oz.	Grs.
Water	2	254	Starch	0	210
Gluten	0	420	Gum	0	70
Glucose	9	328	Fat	0	63
Woody fibre	1	263	Ashes	0	140

Oranges.

In season: November to June.

Enormous numbers of oranges are imported yearly into England, and are of the greatest value in the household, being most wholesome and greatly needed by people who feed as much as we do on a meat diet. Oranges are brought from Spain, Portugal, the Azores, Malta (the blood-orange is peculiar to the island)* and Madeira. St. Michael and China oranges are also much liked. Oranges are eaten as dessert fruit, and also make a delicious compote and fritters. Orange Marmalade, *the* preserve of Scotland, needs no mention, though we beg to add to the many excellent receipts already known, two more of superlative goodness.

Grated Marmalade.

Grate the rind of the oranges off, then squeeze the pulp through a sieve, using a little water, say about a pint to four pounds of oranges; then put on to boil with the sugar, one pound to one pound of fruit, and the gratings; boil till you find the gratings soft, or about half an hour. You may add a lemon.

* The Maltese blood-orange is produced from the common orange-bud grafted on the pomegranate stock. The juice is as red as blood and of fine flavour.

Marmalade with Chips.

To each pound of oranges put two pints of water and two pounds of sugar. The oranges to be peeled, and the peel cut into thin chips, the pulp and juice bruised together, and nothing kept out but the seeds. The whole is then put into a brass pan and boiled for three hours and a half, when the sugar is added and boiled half an hour longer on a slow fire. Two lemons to six pounds of oranges.

Orange Compote.

Time, five or six minutes.

One pound of sugar—eight oranges—a pint and a half of water.

Boil a pound of sugar in a pint and a half of water, with the peel of eight oranges cut very thin, for nearly twenty minutes, removing the scum as it rises. After the oranges are peeled, remove all the white pith without breaking the inner skin, divide them into quarters, and put them into the syrup, and let them simmer for five or six minutes ; then take them carefully out with a skimmer or spoon, and arrange them in the centre of a glass dish (as in plate) with the skins downwards. Boil the syrup until thick, and when cool, pour it carefully over the orange quarters, and set them in a cold place until ready to serve.

Red Crystallized Oranges.

Take off the skin and pith from some China oranges, taking care not to cut them through, and pass a double thread through the centre of each. Powder and sift a pound of loaf sugar, add it to the whites of two eggs, add Cochineal to colour the liquid, and whisk it for nearly twenty minutes. Hold the oranges by the thread, and dip them into the beaten egg and sugar, covering every part with it ; then pass a piece of thin stick through the thread, and fix it across a very slow oven for the sugar to dry.

Lemons.

In season : all the year.

Lemons (from which the useful citric acid is obtained) are imported and are to be had all the year, but come freshly into England in June.

They are an absolutely requisite article of housekeeping, being used for flavouring all kinds of cookery, seasonings, made-dishes, puddings, jelly, etc. etc.

They should be kept hung up in little netted-string bags. The juice can be kept bottled. Lemons also furnish a very good pickle. When only the juice is required, the cook should *peel* the lemon before squeezing it, and the peel should be hung up in the empty bag to dry for use.

Preserved Lemon Peel.

Cut the lemon peel into thin slices; make a thick syrup of white sugar; allow the peel to simmer in it till tender, that will be in less than half an

hour; put it into a jar and tie closely down with a piece of bladder as for any other preserve.

Candied Orange or Lemon Peel.

Boil the rind from thick skinned oranges or lemons in plenty of water, until they are tender, and the bitterness is out; changing the water once or twice. Clarify half a pound of sugar with half a cup of water for each pound of peel; when it is clear, put in the peel, cover them, and boil them until clear, and the syrup almost a candy; then take them out, and lay them on inverted sieves to dry; boil the syrup with additional sugar, then put in the peels, stir them about until the sugar candies around them, then take them on to a sieve, and set them in a warm oven, or before a fire; when perfectly dry, pack them in a wooden box, with tissue paper between.

To Keep Lemon Juice.

Buy the lemons when cheap, keep them in a cool place two or three days if too unripe to squeeze at once; cut the peel from some, and roll them under your hand to make them part with the juice more readily; others you may leave unpared for grating; when the peel shall be taken off and dried, squeeze the juice into a china basin; then strain it through some muslin, which will not permit the least pulp to pass. Have ready half and quarter-ounce phials perfectly dry; fill them with the juice so near the top as only to admit half a teaspoonful of sweet oil into each ottle, or a little more if for larger bottles. Cork the bottles and set them upright in a cool place.

When you want lemon-juice, open such a sized bottle as you can use in two or three days; wind some clean cotton round a skewer, and dipping it in, the oil will be attracted; and when all shall be removed, the juice will be as fine as when first bottled.

EGGS.

The Hen's Egg.

The average weight of a hen's egg in the shell is two ounces.

1 lb. *of Shelled Eggs contains—*

	Oz.	Grs.		Oz.	Grs.
Water	12	66	Oil or Fat	1	240
Albumen	2	0	Ashes	0	288
Extractive matter	0	130			

The egg consists of the shell, the white, and the yolk. The shell is composed of carbonate of lime,—that is, *chalk*. It is full of minute pores or holes through which the air passes for the use of the young bird in the process of hatching. Now as it is the air which causes putrefaction by its chemical effect, we can only preserve eggs by making them air-tight. Whatever, therefore, will *perfectly* close the pores in the egg-shell will preserve the egg.

Rubbing the new-laid egg over with fat or oil, or gum answers well;

and there are several other modes of closing them, as packing them in bran, or just dipping the egg once or twice in boiling water. Saw-dust packing gives a bad flavour to the eggs. The best way is to grease them over or gum them, and turn them occasionally from side to side.*

An egg contains fifty-five parts of carbon, sixteen of nitrogen, seven of hydrogen, and the remaining twenty-two are oxygen, phosphorus, and sulphur. The offensive smell of stale eggs is caused from the hydrogen of the egg combining with its sulphur and phosphorus, and thus forming sulphuretted or phosphuretted hydrogen—two gases which have a horribly bad smell.

It is the sulphur in the egg which uniting with the silver of an egg-spoon tarnishes it as soon as it is moistened with the saliva. This tarnish is sulphuret of silver. It can be removed by rubbing it with table salt.

"The yolk of the egg," says Dr. Hunter, "is a natural soap, and in all jaundice cases no food is equal to it. When the gall is too weak, or by accidental means is not permitted to flow in sufficient quantity, our food which consists of watery and oily parts cannot unite so as to become chyle. Such is the nature of the yolk of an egg, that it is capable of uniting water and oil into a uniform substance, thereby making up for a deficiency of natural bile."

The shell forms more than a tenth part of the weight of the egg, the white six-tenths, the yolk three-tenths.

The white of the egg is the substance known to chemists as *albumen*; in a nutritive sense it answers to the gluten of vegetables and fibrin of meat.

The yolk consists of fat and a variety of albumen. It contains also a *trace* of milk sugar.

The egg is much richer in fat than beef, and is, in fact, only equalled in it by pork and eels.

Eggs are, therefore, very nutritious. The white is constipating, and the egg is better eaten without it by invalids or children—we mean simply the yolk should be eaten by them.

Fat eaten with eggs makes them more laxative, hence "bacon and eggs" form a judicious mixture.

The white of the egg has a glairy consistence, which enables it, when mixed up with moistened flour, arrowroot, sago, etc., to retain the globules of air or of steam which are produced by heat, and thus it enables the mixed materials to swell up into a porous mass. Therefore white of egg gives lightness to puddings, cakes, etc. When we speak of eggs in puddings we mean hen's eggs, because they are the only eggs to be had all the year round.

Turkey and goose-eggs are too valuable for eating in the early summer,

* M. Burnouf recommends in a French journal of agriculture the following method of preserving eggs :—Dissolve in two-thirds of warm olive oil one-third of beeswax, and cover every egg completely with a thin layer of this pomade with the end of the finger. The egg-shell by degrees absorbs the oil, and each of its pores becomes filled with the wax, which hermetically seals them. M. Burnouf affirms that he has eaten eggs kept two years in this manner in a place not exposed to too great extremes of temperature. He thinks also that the germ may in this way be preserved for a considerable time.

but in autumn turkey eggs are often used and are excellent. Ducks' eggs are common enough, but they are richer and not so delicate as hens' eggs.

A fresh egg feels heavy in the hand; but the best way to prove them is to try them in water. Put an egg into a basin of water, if it stands upright on the end it is bad; if it lies obliquely it is *not quite* fresh; if it floats it is bad; if it lies at the bottom it is *quite* fresh. A fresh egg takes half a minute longer to boil than a stale one. The yolk of an egg sets *before* the white does, and if it is put into cold water, *before* the water boils; the white becomes fixed at the temperature of *scarcely* boiling water. Very little heat is required therefore for sauces made with yolk of egg; a little more when white and yolk are boiled together. If boiled custard, or any milk and egg custard, boils in the dish, the egg runs to whey, and the dish is spoiled; quick boiling converts the white of egg into a leathery substance, while the yolk is still moist. The way to make water boil slowly—*i.e., to delay* its boiling, while it gets extremely hot—is, as we have said in "Domestic Science," to add a body to it less volatile than itself. Salt does it, and it is therefore used for poaching eggs, which are plunged suddenly into boiling salt and water, in order to set the albumen speedily.

There are many modes of cooking eggs. We insert a few delicate modes of dressing them:—

Grandmother's Strips.

Make a syrup of sugar, marsala, and water in a rather deep stewpan. Beat together eight fresh eggs with a dessert spoonful of flour, or arrowroot. Get a colander, the holes of which would be the size of a strip of vermicelli, put it over the boiling syrup, pour the beaten eggs in and press them through the holes. They will drop in a thin stream into the liquid, and will be immediately set, or poached, in these tiny forms. On taking them up they are drained and placed on a dish in a pile. Garnish with red sweetmeats.

Morning Eggs.

Boil one dozen eggs hard, press the yolks through a sieve and add to them two ounces of butter, half a spoonful of flour, a little pepper and salt, parsley chopped fine, a little nutmeg, and half a pint of very rich cream. Stir well together *until thick*, cut the white in strips, put them into the sauce.

Eggs au Gratin.

Boil four eggs hard, cut them in halves, take out the yolks, put them into a basin, mix them well together, with a little cream, salt, pepper, and grated cheese; put this mixture into the half whites and brown the tops with a salamander.

Rumbled Eggs.

Take three eggs and beat them; add to them a large cupful of cream, some nutmeg, white pepper and salt; mix together in a bowl, have ready a frying-pan with fresh butter in it, pour in the ingredients and stir it over a slow fire. They are done when they become thick. Serve on buttered toast.

Pickled Eggs.

Boil the eggs for twenty minutes; take them up and plunge them in cold water, shell them, lay them whole in wide-mouthed jars. Pour over them scalding vinegar in which has been boiled pepper, allspice, whole ginger, and a few cloves. Let the pickle get cold; fasten them tightly down, and keep for use. They will not be ready for a month.

Ducks' eggs may be used to advantage in making very rich puddings. Swans' eggs are never eaten in England, but in other lands they, as well as the eggs of many other birds not known to us, are used, and eat well as an omelette, or even simply roasted.

The water in which eggs have been boiled has a strange power of producing warts on the skin if it happens to touch it; cooks should therefore carefully avoid touching egg-water.

Omelette a la Neige.

Break and separate the yolks from the whites of six fresh eggs, add a pinch of salt, the peel of half a lemon minced fine, and five or six pounded macaroons; mix all well together. Then whip the whites to a stiff froth, beat them well into the yolks, and then pour the mixture into a pan of hot butter; stir them round, and raise the edges to separate it from the pan; turn them over, and then turn the omelet on a dish, sprinkle sugar over it and lightly brown with a salamander. Have ready the whites of six eggs beaten to a very great firmness—as thick as cream. Drop heaps of it on the omelet as soon as it is in the dish, and serve quickly. (*See* plate.)

To Keep Eggs—American Receipt.

Take fresh laid eggs, dip each one in melted lard or beef-fat, or rub a bit of butter thoroughly over the shell between the hands; then pack them, the small end downwards, in bran or chaff. In this way they will keep good for months.

Eggs may be kept good for a year in the following manner:—

To a pail of water put of unslacked lime and coarse salt each a pint; keep it in a cellar or cool place, and put the eggs in, as fresh laid as possible. It is well to keep a stone pot of this lime-water ready to receive the eggs as soon as laid. Make a fresh supply every few months. This lime-water is of exactly the proper strength; strong lime-water will cook the eggs; very strong lime-water will rot the shells.

TEA.

Constituent parts of 1 lb.

	Oz.	Grs.		Oz.	Grs.
Water . . .	0	350	Gum	2	385
Theine . . .	0	210	Sugar . . .	0	218
Fat	0	280	Tannic acid .	4	87
Casein . . .	2	175	Woody fibre .	3	17
Aromatic Oil .	0	52	Mineral matter	0	350

Our truly national beverage is made from the leaf of the tea-plant

(*Thea sinensis*), a shrub which bears a great resemblance to the Camellia Japonica. The tea-plant is a native of China, and grows wild in some parts of that country and of Japan. The leaves of the tea-plant are gathered (chiefly by women) in the spring. The tea-harvest generally ends in May or June; they are, however, gathered at three successive seasons, —the young and tender leaves giving the highest flavoured tea; the second and third gatherings are bitterer and have more woody leaves.

The refuse and decayed leaves are pressed into moulds, made hard with ox blood, and sold as BRICK TEA in Northern China, and beyond the Great Wall.

Tea is either green or black. As it is now well known that the green teas are painted with Prussian-blue or indigo, black tea is the general choice of the nation; though some still prefer green.

The leaves for *black* tea are spread out and left in the air for some time after they are gathered; they are then tossed about till they become soft and flaccid; next washed for a few minutes and rolled. Afterwards they are exposed to the air for a few hours in a moist state, and then dried slowly over charcoal fires. The leaf blackens by exposure to the air.

For *green* tea the leaves are spread thinly on bamboo-trays for one or two hours, and then dried off rapidly and rolled.

The principal varieties of black tea are—Bohea, Congou, Campoi, Souchong, Caper, and Pekoe. The green teas are Twankay, Hyson-skin, Hyson, Imperial, and Gunpowder.

Pekoe, or "White-down," is made from the downy sprouts or leaf-buds of plants of three years' growth.

Caper is in hard grains; it is made of the dust of the other teas, cemented with gum.

The practice of scenting teas is common, and various sweet flowers and odoriferous plants are used for the purpose.

Tea was brought to England in the seventeenth century only, and was immensely expensive. The East India Company made a present to the Queen of Charles II. of two pounds of tea as a very costly gift.

Dried Sage leaves formed the tea of England till then and for very long afterwards. They were, in fact, used up to the middle of the last century.

The effects of tea are well known, it "cheers without inebriating;" excites the brain to activity and watchfulness; soothes the system, and *stays the waste of the body.*

This last effect is produced by the substance in it called THEINE.

Theine is composed of carbon, hydrogen, oxygen, and nitrogen; three-tenths of its substance being nitrogen. Theine has, as we have said, the remarkable power of sensibly diminishing the waste of the body. Now, as we eat to supply this waste, it follows that if the waste be less we shall want less food. Tea, therefore, saves solid food while it cheers and soothes the spirits. For old people—in whom the daily waste of the tissues is greater than in the young—tea is very valuable; while the poor, who have scanty food, reasonably cling to their "cup of tea," as their great stay and solace.

It is wise in the poor to buy *good* tea (as they almost invariably do), because the support is greater in the purer beverage than when adulterated with sloe-leaves, etc.

Baron Liebig has shown that THEINE is of all substances the most easily converted into *bile*, and that by means of tea this necessary fluid can be produced in those who are ill-fed or take little exercise.

The fashion of the five o'clock cup of tea is therefore evidently a wise one.

Tea-leaves contain a great deal of gluten, and if eaten would be as nutritious as beans or peas. This fact is worth knowing in case of famine.

A pinch of soda in the water poured over tea, dissolves a portion of this gluten and renders the tea more nutritious.

Adulteration of Tea.

Congou and Souchong are the teas which reach England unadulterated by the Chinese. English adulterations are sloe-leaves and blackthorn-leaves dried, broken in pieces, and mixed up with a paste made of gum and catechu, or Japan earth; ash and plum-leaves, silkworm dung, dung of pigs and dogs, or exhausted tea-leaves bought from hotels, re-dried, mixed with gum and faced with rose-pink, or blacklead, or copper, for green tea.

Taking these frauds into consideration, we think it is wise to buy of a first rate dealer, whose honour may be relied on.

Souchong is the finest of the strong black teas; Pekoe the most delicate.

Tea to preserve its flavour must be kept in *lead*.

To make tea, take care that the water *boils:* tea cannot be made with any but boiling water. A teaspoonful for each person and one over "for the pot," is the quantity required; let it stand five minutes. Keep the tea-pot (if possible) covered with a woollen "cosy."

Flesh-producers remain with the tea-leaves, but may be taken up, as we have said above, by putting a little soda in the water.

COFFEE.

Constituent parts—1 lb. *of coffee contains*—

	Oz.	Grs.		Oz.	Grs.
Water	1	407	Woody fibre	5	262
Aromatic oil	0	$1\frac{1}{2}$	Casein	2	35
Potash	0	280	Sugar	1	17
Caffeine or theine	0	122	Fat	1	402
Gum	1	192	Mineral matter	1	31

The Coffee tree is a native of southern Abyssinia, where it grows in the countries of Enárea and Cáffa like a weed. Coffee was brought from Abyssinia to Arabia in the beginning of the fifteenth century. About the middle of the sixteenth century it reached Constantinople, and became an article of general consumption. In 1652 the first coffee-house was opened in London by a Greek named Pasqua, and twenty years after the first French coffee-house was opened at Marseilles.

Ceylon, Jamaica, Costa Rica, and Brazil supply us with coffee.

The Arabian or Mocha, considered the best, is small and of a dark yellow colour. Javan and East Indian are larger and of a paler yellow.

Ceylon, West Indian, and Brazilian coffees have a bluish or greenish grey tint.*

The coffee tree is an elegant tree, covered with a dark shining and evergreen foliage. It flourishes in a dry soil and warm situation. It has pale white fragrant flowers, and its fruit grows in clusters. Inside the fruit are the berries or seeds which we use.

Berries improve in flavour by keeping—of course unroasted. The Mocha berries will ripen in three years, and bad coffee will in ten years be good and of fine flavour.

Everybody knows the good effects of coffee. It cheers the spirits, rouses us and keeps us awake, and counteracts stupor caused by fatigue or by opium. To a certain extent it allays hunger, by retarding the waste in the tissues of the body. With coffee to drink much less food is required—as much as one-third less, the great chemists tell us.

Coffee has great medicinal virtues ; it is said to be an excellent antidote to gout, and to cure other painful diseases.

Coffee-tea must here be mentioned. It is made from the leaves of the coffee-tree roasted over a clear fire till they become of a dark buff colour. They are then separated from the twigs, the bark of which is roasted, rubbed off and used with the leaves. They are immersed in boiling water, give a brown infusion, and with sugar and milk form a very pleasant beverage. They have a fragrant odour like that of tea and coffee mixed. They are said to have great effect on the body and mind, strengthening the former and making the intellect clear and active. A greater portion of theine is found in them than in the coffee bean itself. Coffee is sometimes mixed with chicory.

It is best to buy *unroasted* coffee-beans and roast them as required. Coffee can be bought wholesale at 1*s.* per pound, but as dealers will not sell less than twenty-eight pounds weight at that price, it must be bought unroasted, or it would not keep.

Coffee *makes* better if the powder be warmed first before the water is poured on it.

Roasted beetroot is a substitute for coffee.† The root is roasted and ground and made in the same manner. The root of the dandelion, also furnishes a coffee which is excellent for the liver. It is called Taraxacum coffee, and can be bought at all chemists.

Allow for each person a dessert spoonful of coffee ; use a biggin, as it should be made with *boiling water*, but *not* boiled. Coffee keeps people awake, and should not therefore be drank at night.

---

* Of course that is *unroasted.*

† Cut it in slices, add a little piece of butter to prevent burning, and roast them dry over a good fire ; then powder them.

COCOA AND CHOCOLATE.

Constituent parts of 1 lb. *of paste*—

	Oz.	Grs.		Oz.	Grs.
Water	0	350	Starch	1	53
Butter	0	8	Theobromine . .	0	140
Colouring matter .	0	140	Woody fibre . .	0	280
Albumen and gluten	3	85	Mineral matter .	0	280
Gum	0	426			

The Mexican Cocoa is the seed of the *Theobroma cacao*, a small tree with bright dark green leaves, which grows in the West Indies and the central regions of America. It grows wild in Mexico, and there are whole forests of it in Demerara. In the Mauritius and Isle de Bourbon it is cultivated. It was first known in its best form as *chocolate*—the Mexican name being chocolatl, and was brought to Europe by the Spaniards in 1520. Timæus gave this tree the name of Theobroma—food for the gods—on account of the beverage being so delicious.

The fruit of the tree, which grows like the fig from the stem and branches, is of the form and size of a short but very thick cucumber. When ripe the seeds are taken out, cleaned from the marrowy substance of the fruit, and dried in the sun. These seeds are called cocoa beans. They are of a dark colour, and have a bitter taste. They are gently roasted in an iron cylinder, as coffee is roasted, and when the aroma is fully developed, they are left to cool. The beans, when freed from their husks, are beat into a paste in a hot mortar, or ground between hot rollers; this paste when mixed with sugar and seasoned with vanilla, cinnamon, or cloves, is *chocolate;* mixed with starch, sugar, and other ingredients it forms the ordinary breakfast COCOA. The husk, which is removed from the bean and crushed into fragments, forms the *cocoa nibs*—the purest state in which cocoa is sold.

Chocolate is made into sweet cakes and bonbons, which are very nutritious and strengthening—a few being capable of giving great support. Chocolate scraped to a powder and boiled in milk is very refreshing and nutritious.

The cocoa powder mixed with boiling milk is now a common morning beverage; it is alterative, heat-giving, and flesh-forming.

One reason of its usefulness as an article of diet is the presence in it of the substance called *theobromine.* This substance contains carbon, hydrogen, nitrogen, and oxygen in itself, and is particularly rich in nitrogen, which exercises an active influence on the human system.

Cocoa also contains a great deal of fatty matter called cocoa butter. It has therefore great power of nourishing, while the theobromine exhilarates and soothes the spirits, and has a waste-retarding power.

Cocoa is adulterated with its own husks, starch, sugar, ground roots, and *red ochre,* which is a very injurious substance; its presence can be detected by burning the cocoa in the air; then examine the *ash;* if it be *grey* the cocoa is pure; if red, it is adulterated with ochre.

SUGAR.

The Sugars in modern use are, cane sugar, maple, beet, maize, and palm sugar. The ancients had only honey, grape sugar, manna, and fruit sugars.

Sugar is also maufactured from potatoes, seaweeds, milk, Carrageen, Ceylon, and Iceland mosses, and even from sawdust and rags!

The cane sugar first claims our attention. It is the juice of the sugar cane, a plant which was cultivated in China and the South Sea Islands before the historical era; for it is really a native of the East. Through Sicily and Spain it reached the Canary Islands. It was introduced to St. Domingo by the Spaniards in 1520, and gradually spread all over the West Indies and tropical regions of the New World. It will, however, grow far beyond the boundaries of the tropics. It flourishes in a temperature of from 77° F. to 66° F. It is grown also in Nepaul, and on the high plains of Mexico. The juice of the sugar cane contains:—sugar, 18 to 22 parts in the 100; water and gluten, 71; woody fibre, 10; saline matter, 1.

The sugar cane is a very elegant plant; the sap contains the sugar up to a certain height, after attaining which it appears to spend its sweetness in nourishing the growing stem and leaves. Consequently only the under part of the cane is used for the extraction of sugar. The leaves and tops are chopped off, the remainder of the canes are passed between heavy iron rollers which crush them, and squeeze out the juice into large vats or vessels where it is clarified by the addition of lime.

Lime neutralizes the acid which forms in the fresh juice, combines with the gluten, and carries it to the bottom of the vessel. The gluten is removed, because if left it would act as a natural cause of fermentation, and cause the sugar to turn to acid. After being clarified and filtered the juice is boiled rapidly down, and run into wooden vessels to cool and crystallize.

When the crystals are formed it is put into perforated casks to drain. The remainder left is muscovado or *raw* sugar; the drainings are molasses. The molasses and skimmings are fermented and distilled into rum.

The raw sugar is still further refined by boiling, &c.

The juice of the sugar cane is so nutritive that it is a perfect food for man, capable of sustaining life without any other sustenance; but this is not the case with sugar, because the gluten has been removed.

Beetroot Sugar comes next in the list of European sugars. It is extracted from the sugar beet, which often contains a tenth of its weight in sugar; by squeezing out the juice the raw sugar is obtained, and when refined can scarcely be told from cane sugar. Beet sugar is manufactured in France, Belgium, Germany, and Russia.

Palm or Date Sugar, or Jaggery.—When the top shoot of any of the great palms is wounded it yields a quantity of sweet juice, which, boiled down, gives the slightly brown raw sugar known by the name of jaggery. The date and the gommuti palm both yield sugar. The wild date palm, *Phœnix Sylvestris*, supplies the largest amount of the saccharine juice. This date sugar is chiefly consumed in India, but some of it is imported into this country and occasionally sold as cane sugar.

The COCOA-NUT TREE has also a saccharine sap which is boiled down (in the South Sea Islands) till it becomes a brown syrup resembling molasses.

MAPLE SUGAR is the juice of the sugar maple (*Acer saccharinum*) which grows in New England, and by the lakes, and in the provinces of British America. The Canadas produce a great deal of maple sugar.

In several parts forests of maple trees cover the country, and from them large quantities of maple sugar are obtained. Incisions are made in the trunk for the purpose of collecting the sap, which is gathered twice a day. The first which issues from the tree after an incision is made, is clear and without taste or colour; but after standing a day or two it becomes sweet, and a few days after the sap runs sugary from the tree. It is boiled down to the crystallizing point, and poured into brick-shaped moulds in which it becomes solid. Specimens of maple sugar of every kind may be seen in the Food Gallery of the South Kensington Museum.

The brown-coloured sugar is preferred on account of its maple flavour, but the clear sap when carefully boiled in glazed pots will yield a beautifully white sugar, which cannot be distinguished from cane sugar. The molasses drained from maple sugar is very pleasant to the taste, and is an American luxury.

MAIZE SUGAR is made from the green stalks of maize or Indian corn, which, when boiled down, give a good sugar juice.

POTATO OR STARCH SUGAR.—Starch of any kind is dissolved by boiling and becomes a sticky jelly; by the addition of a little sulphuric acid it is converted into grape or honey sugar. One pound of acid to one hundred pounds of starch will suffice to convert into sugar, potato, wheaten, or sago starch. By a further chemical process a solid sugar can be obtained—*i.e.*, the acid is separated by lime, and the liquor boiled down. Or if sulphuric acid be objected to, *malt* may be used for the same purpose. Fifteen pounds of malt are added to one hundred pounds of starch; it is subjected to a heat of 160° F. or 170° F. for three hours, then filtered and evaporated. This sugar is used for adulterating cane sugar, and in the manufacture of spirits. Brandy is also distilled from it.

Sulphuric acid has also the marvellous effect of changing paper, cotton, or flax, cotton and linen rags or sawdust into sugar by the same operation, only demanding a longer time to achieve the transformation, as it first changes the material into starch, and then the starch into sugar. Robinson Crusoe would have rejoiced to know that from starch he could manufacture sugar for himself. The barley supplying the malt.

The MOSSES known as Carrageen (collected on the coast of Ireland), Ceylon, Iceland, and many other seaweeds, yield when boiled in water a jelly which is very nutritious and wholesome in itself, and can be converted by sulphuric acid into sugar.

SORGHUM SUGAR and SUGAR MILLET are Chinese sugars. Sorghum is the juice of the *sorghum*, a kind of Dhurra plant.

Coarse brown sugar, though the cheapest, is not profitable to purchase. It is mixed with woody fibre and grit, and contains a kind of fungus resembling the yeast plant. Dr. Hassall found in it the Acarus sacchari, or sugar mite, an insect which resembles the itch insect, and which he thinks may cause the grocer's itch, a complaint attacking people who handle sugars. Good moist sugar is light in colour, dry, and crystallized; the

more it is crystallized the better it is. Bad moist sugar is damp, heavy and not crystallized. It is no economy at all to buy it, as it outweighs the good. Lump sugars differ very little; the price being affected chiefly by the colour. The whitest is the dearest.

MOLASSES AND TREACLE.

Molasses is the drainings of the raw or unrefined sugar; treacle the drainings of refined sugar.

Sugar contains four to ten per cent. of moisture; treacle, about twenty-three. The rest is carbonaceous matter, but contains no nitrogen.

They are therefore heat-producing and fattening agents.

HONEY.

Honey is the sweet juice of flowers prepared for our use by the honey-bee. The working bees extract it from the nectaries of the flowers, deposit it in their crop or honey-bag, which is an expansion of the gullet, and disgorge it when they return to the hive. Some chemical change probably takes place in the juice while secreted in the insect's crop, and transforms it to honey. When suffered to stand for a length of time liquid honey thickens.

If it is then pressed through a linen bag, a thick syrup will flow out, and crystals of solid white sugar will be found remaining in the strainer. This is precisely the same as the *grape sugar* procured from raisins.

Honey contains besides this grape sugar yellow colouring matter, wax, and gum. Honey is flavoured by the flowers which feed the hive. Hence the honey of Crete, Minorca and Narbonne is flavoured with rosemary, that of Hymettus with thyme, Provence honey with lavender, Cuba honey with the orange flower.

Sometimes honey becomes poisonous by the bees sucking the rhododendron, azalea, monkshood, or kalmias.

The honey of Trebizond causes headache, vomiting, and a species of intoxication in those who eat it.

It was probably a rhododendron honey which intoxicated the soldiers of Xenophon, during the famous retreat of the Ten Thousand.

Strong spirits are obtained from fermented honey—Mead, Metheglin, and Hydromel—but they are no longer used in England.

To Keep Honey.

Heat strained honey to the boiling point, and store it in covered jars, when it will keep without candying. To prevent danger of burning, set the vessel in which it is to be heated into another containing water.

American Honey Cakes.

One quart of honey; half a pound of powdered white sugar; half a pound of fresh butter; two lemons; one nutmeg, and one pound and three-quarters of flour.

Press the juice from the lemons, strain the honey; mix the honey,

powdered sugar, and butter together with the lemon-juice. Put them in a stewpan and warm them slightly over the fire till the butter is softened; shake into it gradually a pound and three-quarters of *flour* (sifted). Make it into dough stiff enough to roll out; beat it well with a rolling-pin, then roll it out to half an inch thick; dip the top of a tumbler in flour, and cut this paste into rounds with it: lay them in tin pans, slightly buttered, and bake them.

Honey Cakes.

Three pounds and a half of flour; one pound and a half of honey; half a pound of sugar; half a pound of butter; half a nutmeg grated; one tablespoonful of ground ginger; one teaspoonful of saleratus, or carbonate of soda.

Mix the sugar with the flour and grated ginger, and work the whole into a smooth dough with the butter beaten to a cream, the honey and saleratus, or soda, dissolved in a little hot water. Roll it a quarter of an inch think, cut it into small cakes, and bake them twenty-five minutes in a moderate oven.

Honey Noyau.

Time to make, ten days.

Four ounces of bitter almonds; two ounces of sweet almonds; two pounds of loaf sugar; juice of three lemons; two quarts of gin; two large tablespoonfuls of clarified honey; one pint of milk.

Blanch and pound the almonds, and mix them with the sugar, which should be rolled. Boil the milk, and when cold, mix all the ingredients together, and let them stand ten days, shaking them every day. Filter the mixture through blotting paper, bottle off for use, and seal the corks down.

Seeds and Dried Vegetables for Winter Use.

Keep celery and parsley seed in the store-room for flavouring soup and making parsley sauce. The seed boiled giving the flavour.

Liebig's extract of meat can be flavoured by boiling vegetables, herbs, etc. in water first, and making the soup with this flavoured boiling water. A preparation of vegetables—*i.e.*, of finely shred carrots, turnips, onions, celery, etc. is sold in packets by La Compagnie Française d'Alimentation for flavouring this soup also, but the vegetables boiled and the water used will be found the better way. As an addition to stock made from bones alone, flavoured with vegetables, Liebig's extract is most useful; a capital and most nutritious tureen of soup being produced from the admixture of a very small quantity of the extract.

PICKLING AND PRESERVING.

Pickling is preserving fruit or vegetables in vinegar. Orleans, or white-wine vinegar, though the dearest to purchase, will be found the cheapest in the end, as it keeps best: indeed the success of pickling depends on the goodness of the vinegar. It must, if boiled, be done in saucepans lined

with unglazed earthenware, or in stone pipkins; if these are not to be had, the vinegar must not be suffered to remain a moment longer than necessary in the tin saucepan. Wooden spoons must also be used in preparing pickles, as the vinegar acts chemically on metal; also no glazed earthenware may be used for keeping it, as the vinegar acting on the glaze produces a mineral poison.

Everything relating to the art of pickling will be found in Warne's "Model Cookery Book," but we add a few general instructions of our own. Here is an East Indian mode of pickling:—

Take one pound of raw ginger, soak it in water one night, then cut it into thin slices and lay it on a clean sieve to dry. Take two ounces of long pepper, cut it in slices as you did the ginger; then take a pound of garlic, lay it in strong brine for three days, and then dry it as you did the ginger. Then mash it well, or cut it in slices. Put a quarter of a pound of mustard seed into a mortar with half an ounce of turmeric, half a pound of made mustard, and plenty of Cayenne pepper. When all these ingredients are prepared put them into a large stone jar, with a gallon of vinegar, stir it well and often for a fortnight and tie it over closely. Into this pickle you can put any kind of vegetables which have been first *well dried.*

The whole process is a *cold* one; the vinegar is *not* to be boiled.

This pickle will keep good for years if replenished occasionally with vinegar. Keep it filled with vegetables.

Then there is the simple one of cold vinegar alone, without mustard or spices:—Half fill some large glass bottles with vinegar, drop into it any vegetables which being hot in themselves do not require spices, etc. In one bottle put capsicums and chilis; in another, horseradish, eschalots or garlic. Fill each bottle and cork the bottles well down, tie them over with bladders.

Horseradish must be scraped and cut up in rounds about half an inch thick.

The other mode of pickling is with hot vinegar. It should not be boiled, as it loses its strength by evaporation. The vinegar must be put with the spices into a stone jar, bunged well down and covered with a bladder. It may then stand in the oven for three days, shaking it two or three times a day. The vegetables should be prepared by laying them in brine, or sprinkling them with salt for a day or two; then put them into glass bottles and pour the hot vinegar on them. In every case the vinegar must be two or three inches above the vegetables or they will not keep, for the vinegar will gradually be absorbed in the pickles and will therefore shrink. When this is the case more vinegar must be added.

These modes of pickling will answer for all vegetables but walnuts, artichokes, and beetroot, which must be done over the fire themselves. *See* "Cookery Book" for these especial pickles, and for many others.

SAMPHIRE.—This seaside wild plant, very much used in the reign of our good Queen Bess, is now not common. Our readers doubtless remember the passage from "King Lear," in which Shakspeare alludes to the dangers to which the samphire gatherer was exposed.

"How fearful
And dizzy 'tis, to cast one's eyes so low!

> The crows and choughs that wing the midway air,
> Show scarce so gross as beetles ; halfway down
> Hangs one that gathers samphire ;—dreadful trade !
> Methinks he seems no bigger than his head.
> * * * * * * *
>
> I'll look no more
> Lest my brain turn, and the deficient sight
> Topple down headlong."

One has some reason to rejoice that this "dreadful trade" is no longer remunerative !

Samphire when gathered for immediate eating, is only put into equal parts of sea-water and vinegar. For pickling, steep it in brine for two days ; then put it into a jar with vinegar and bake in a cool oven all night, the top of the jar must be covered with a paste of flour and water. When it is done and cool, remove the paste, put the pickle into a glass bottle, fill up with cold vinegar and tie down as for all pickles.

Barberries pickled for garnishing, are dropped into cold vinegar. They must be gathered before they are ripe. Nice bunches to be chosen.

Another Mode of Preserving Barberries.

They must be gathered when not over ripe, and the leaves and dead stalks should be picked off ; after which they should be placed in jars in a large quantity of salt and water, and tied down with a bladder. They must be looked at occasionally, and as soon as a scum is seen to rise on them they should be put into new salt and water.

Nasturtium Buds.

Gather the seeds in sunny weather, and sprinkle them with salt for a day or two. Drain them from the salt, wipe them, and put them into a pickle bottle. Boil some vinegar, with one ounce of salt to every pint of vinegar, pepper-corns and allspice. Let it get cold and cork closely down for use. These seeds will serve instead of capers for sauce for boiled mutton, or they may be eaten as pickles.

Glass bottles should be used to keep pickles in, and they must stand in a very dry place.

A friend of the writer advises improving the purchased pickles rather than making them wholly at home. He takes some bottles of Crosse and Blackwell's piccalilli, turns out the contents and washes them well with plain cold vinegar. Then he boils up vinegar, ginger, whole peppers, and a quarter pound of mustard together and pours it over the pickles, restores them to their bottles and ties them down.

List of Vegetables for Pickling at Certain Periods.

In July and August.—Capsicums, cauliflowers, cucumbers, chilis, gherkins, onions, nasturtiums, walnuts, radish pods, French beans, red cabbage, samphire, shalots, garlic.

October and September.—White cabbage, mushrooms, forked horse-radish, for vinegar.

Melons (as mangoes), artichokes, etc., about August.

Pickles should be examined often; if any mould appears the vinegar must be boiled up with spices.

Fill the bottles up with vinegar when it has sunk below the pickles. Red cabbage is the most wholesome pickle.

Preserving.

The requisites for making jams and jellies are enamelled or iron preserving-pans (no other should be used), a wooden spoon, a hair-sieve, and a jelly-bag; copper and brass pans are dangerous on account of the chemical action of the fruit acid on the metal; doubly-galvanized iron or block-tin pans are safe, but they are apt to injure the colour of the preserves.

The sugar used for jams is called preserving sugar, it is a coarse white, and costs about 5*d.* per pound at present; it takes three-quarters of a pound of sugar to one pound of fruit for preserving, with the exception of damsons, which require equal weights of sugar and fruit.

The great secret of preserving well is the boiling, which *must* be *sufficiently long*, and sufficiently *quick*. The following general directions will, it is hoped, suffice in a work of this kind.

Gather the fruit in sunshine if possible, if not, in perfectly dry weather, and without dust. Pick the fruit off its stems, etc., top and tail gooseberries; boil all fruit for jellies or jams *alone* for twenty minutes, to evaporate the water they contain; skim carefully. Make the sugar warm before the fire meantime, then add it to the fruit and stir gently but continually, removing the scum as it rises till the jam is done thoroughly. Then put it in white jam-pots to cool. Next day cover with paper saturated with white of egg or starch.

Different fruits require different times for boiling. Excellent directions for every one of them will be found in the "Model Cookery Book."

Keep jams in a cool place, or they will be liable to ferment. Examine the pots now and then. If the paper at the top is stained, or the jam has run over the sides of the jar, it must be opened and the jam boiled up again.

Clarifying sugar for sweetmeats is a confectioner's art; it will be found in the "Model Cookery Book," p. 594.

Candying fruits is done by first preserving the fruit in sugar syrup, then washing the syrup off in hot water, drying the fruit before the fire, and sifting double-refined sugar over it till it is quite white; it is then put in a moderate oven to dry.

For jellies the juice only of the fruit is boiled with the sugar, and finally strained through the jelly-bag.

Bottling.

This mode of preserving fruit depends wholly on the exclusion of the air from the bottle in which they are put. The following is the best plan:—

Nearly fill a dry bottle with dry fruit, say cherries (do not break the fruit in any way—cut off the stalks), add to every pound of cherries three ounces of sugar; tie them tightly down with starched paper covered with bladder, keep them in the oven all night, putting them in at nine o'clock in the evening. Remove them next morning before the fire is lighted;

put them in a dry, cool, dark cellar, or bury them in the garden head downwards and at least a foot deep, mark the spot and dig up when required.

Preserving in Spirit.

The fruit must be pricked with a fine needle, sugar strewn over it, and the glass bottle filled up with brandy or wine, as required. *See* " Model Cookery" for individual receipts.

There is very little economy in home-made jams in London, or indeed anywhere else unless the housemother has a garden and home-grown fruit. Crosse and Blackwell's jams and jellies are excellent, and allowing for fire, labour, and possible failure, it is as cheap to buy jams and jellies as to make them ; but in the country and with a good fruit garden this is, of course, not the case, and the good housekeeper will do well there, in making jams and jellies, according to good receipts, for household use.

Herb Mixture.

Two ounces of knotted marjoram, two ounces of winter savory, one ounce of basil, one ounce of tarragon.

Rub these dried herbs together and put them into a spare clean dry pickle bottle. Cork them closely down for future use.

Preserved Meats.

Potted preserved meats when bought at a tradesman's who can be relied on are excellent. Potted ham, tongue, beef, bloaters, etc., are very useful for breakfast or light supper. Cold boiled beef sold in tins, cold chicken, etc., are excellent, so also are beef and bouilli, but it requires a little additional flavouring. Australian boiled mutton is also a cheap and excellent food. For invalids, Joubert combines meat extract with iodine and bromine, and recommends the combination in cases of chlorosis and consumption. Two gr. extr. carnis are mixed with fifteen ctgr. kal. iodat. or kal. bromatum.—*Food Journal.*

The potted soups all require flavouring and the addition of fresh vegetables, wine, lemon-juice, ketchup, herbs, etc ; but well-managed they save trouble. They are not, however, as cheap, nor (when it is well made) as good as home-made soups. They are 1*s.* a tin.

One tin of the Condensed Swiss Milk should be kept in the store-room as a resource if the milk of the house fails. It is diluted with warm water for use, according to the taste and judgment of the user.

We conclude in the words of a Journal which every housekeeper should take in :

" Let me recommend two convenient additions to the store closet. Pastilles for soup, which consist of balls composed of vegetable matter (sold in bottles, and costing about a halfpenny a ball), are invaluable for colouring and flavouring soups, only requiring to be added with the meat or bones ; as are also dried mushrooms, an Italian preparation, but unfortunately three times the price in London that one has to give in Italy ;

1. Potato Cakes.
2. Pink Fritters.
3. Raspberry Fritters
4. A Bird's Nest.
5. Arrowroot Fritters.
6. Orange Fritters.
7. Maccaroni.

nevertheless, in flavouring dishes a little goes a long way, and they can of course be used when mushrooms are out of season. Both the pastilles and mushrooms are to be obtained at Piccirillo's, Wigmore-street, London.

"Do not throw away as utterly worthless the remainders of lemons which have been peeled and squeezed. Lemons have very cleansing properties, and such fragments if put into the scullery soap-dish will cleanse both the hands of the cook, and her saucepans."—*Food Journal.*

Night Lights.

Nightlights are merely short pieces of stearic acid, or stearine, with a fine wick enclosed in a thin roll of paper or wood shaving. They are burnt in a little glass or china stand holding water to prevent the envelope igniting. They are sold at 6*d.* the box. A good supply should be kept in the storeroom, and a box at a time should be given to the housemaid.

A FEW USEFUL RECEIPTS.

Brown Colouring.

To make for keeping.

Into a clean frying-pan put a quarter of a pound of brown sugar. Place this over a slow fire, then gradually heat it until the sugar boils and the steam bubbles disappear, and are followed by others from which issue little puffs of white smoke. When these appear all over the surface the caramel, as the sugar is then called, is in its best condition. Remove it from the fire, and add a pint of lime water.* This will dissolve all the true colouring. Strain it through muslin, and preserve it in a bottle for use. The more sugar used the darker will be the colouring.

Colourings for Jellies, Ices, or Cakes.

For a beautiful *red*, boil fifteen grains of cochineal, finely powdered, with one and a half drachm of cream of tartar, in half a pint of water, slowly for half an hour, adding a piece of alum the size of a pea; or sliced beet-root and some liquor poured over it, may be used. For *white*, use almonds finely powdered, with a little water, or use cream. For *yellow*, yolks of eggs, or a very small piece of saffron steeped in the liquor and squeezed. The juice of boiled spinach or beet-leaves may be used for *green*. Chocolate or strong coffee may be used for *brown*.

Orange Fritters.

Take the peel and white skin from three large oranges; then cut them across into slices; pick out the seeds; dip each slice of orange into a thick batter. Fry them nicely, and serve them with sugar sifted over each.

Arrowroot Fritters.

Put a pint of new milk and the same of cream over the fire until it boils; mix two ounces of arrowroot very smooth in a little cold milk, and stir it as quickly as possible into the boiling milk and cream; add a little vanilla, the yolks of eight well beaten eggs, and sugar to taste; stir it for about twenty minutes over a quick fire, then put it into a deep

* Lime water is made by placing a lump of quicklime the size of a walnut in a winebottle full of hot water, and allowing it to settle for a day.

cutlet pan, and bake it about ten minutes in a quick oven. When it is cold, cut out the fritters with a round cutter, and egg, bread-crumb, and fry them ; glaze and send them up very hot, with greengage or apricot sauce in the dish.

Pink Fritters.

Boil a large beet-root till it is tender, and then beat it fine in a mortar; add the yolks of four beaten eggs, two spoonfuls of flour, and three of cream ; sweeten it to your taste, grate in some nutmeg, and the peel of half a lemon, and add a glass of brandy. Mix all well together, and fry the fritters in butter ; garnish them with green sweetmeats, apricots preserved, or green sprigs of myrtle.

Raspberry Fritters.

Grate two Naples biscuits ; pour over them half a gill of boiling cream, and set it to cool. Beat the yolks of four eggs into a strong froth, and then beat them into the soaked biscuits. Add two ounces of sugar pounded fine, and as much raspberry juice as will flavour it and give it a pink colour. Drop it from a spoon, the size of a walnut, into a pan of boiling fat, and when done, drain them from the fat, stick shreds of citron into some, and blanched almonds cut into long strips into others. Garnish with sweetmeats.

Potato Cakes.

Boil and mash three mealy potatoes ; mix them with three ounces of sugar, three ounces of flour, a little grated nutmeg, a small piece of butter, and two well beaten eggs. Make them into cakes ; fry a nice brown, and serve them on a table napkin. (*See* also Article on "Potatoes.")

A Bird's Nest.

Cut the peel of six lemons in long thin shreds ; cut the same quantity of angelica in shreds ; put half a pound of loaf sugar, one ounce of gum Arabic, and two tablespoonfuls of water into a basin ; stir it till it is dissolved, then set it over a slow fire, stirring it till it is of the consistence of melted glue. Take a basin, butter it or slightly oil it inside, then lay the shreds of angelica and lemon peel in the form of a bird's nest inside it; stick them with the glue. Make some good isinglass jelly, colour it with spinach juice ; take a basin about two sizes smaller than the first used, butter or oil the *outside* of it ; pour a little jelly over the bottom of the nest ; stand the second basin in the first, and fill up the space between the two basins with the liquid jelly ; let it get cold—ice it ; turn it out carefully, and stand the nest on the remainder of the jelly which must have been poured flat over a glass dish, and let get cold. Make eggs of blancmange and place in the nest, or beat the whites of eggs to a thick froth, and form them into eggs for it, flavouring with vanilla ; but the blancmange eggs are best, and the moulds easily procured.

A Cheap and Elegant Cream.

Time, nearly an hour to beat the eggs —twenty minutes more altogether.

One quart of milk ; six eggs ; vanilla flavouring ; sugar to taste.

Set the milk in a stewpan on the fire to boil ; break the whites of six eggs into one basin, and the yolks into another ; beat up the eggs to a high stiff froth, and as soon as the milk boils lay large flakes of the egg whip on the milk ; let them boil for a few minutes ; repeat the operation with the remainder of the froth until all has been set, then pile it high in the centre of a glass dish ; make a custard of the yolks of the eggs, flavoured with vanilla, and pour it

round the snowy pyramid. It will maintain its place for many hours.

Thatched Pudding.

Time, twenty minutes.

Two ounces of butter; two dessertspoonfuls of flour; a little cold milk; half a pint of boiling milk; two lemons; four eggs; angelica; lemon peel—six or eight almonds.

Melt two ounces of butter, mix two dessertspoonfuls of flour with a little cold milk, till quite smooth; pour over it half a pint of boiling milk, add the peel of a lemon grated, and sugar to taste. When cold stir in the yolks of four eggs well beaten, and add the whites whisked to a stiff froth, and stirred into the pudding the last thing before putting it into the mould. Wet a mould; line it thickly with shreds of lemon peel and angelica with little bits of shred almonds interspersed, dipped in white of egg. Pour the pudding in very carefully, and boil it for twenty minutes.

Biscuit Pudding.

Three ounces of flour, the same of pounded sugar and butter, the yolks of three eggs, and the whites of two, mix all well together, having previously warmed the butter, and beat the mixture for ten minutes; put some thin strips of candied peel into some small moulds, pour in the mixture and bake for half an hour in a slow oven.

Floating Island.

Set a quart of rich milk to boil, when it does so, stir into it two small tablespoonfuls of white sugar, and the beaten yolks of six eggs; flavour with lemon or peach water; whip the whites to a high froth; when the custard is thick, put it into a deep china or glass dish, and heap the frothed eggs upon it; it may be finished by putting a spoonful of jelly or jam over the frothed eggs.

Broiled Lobster.

After having boiled the lobster, split it from head to tail, take out the uneatable part called the "lady," lay it open, put pieces of butter over the meat, sprinkle it with pepper, and set the shells on a gridiron over bright coals until nicely heated through. Serve in the shells.

Ice Pudding.

Make a thin custard with a pint of milk and the yolks of four eggs, keeping out a little milk to mix with some currants, raisins, the crumb of a sponge cake, candied lemon and citron, grape, apricot, or any thing that is nice. Scald the currants and raisins and mix them with the cold milk, then stir all together, and put it into the mould; plunge it in a bucket of ice pounded with salt, turning the mould every two hours, and the inside occasionally. Flavour with vanilla.

COOLING SUMMER AND HOT WINTER DRINKS.

ICE.

Ice, once a luxury enjoyed only by the rich, has become a necessity of daily life. Rough ice, at 1*d.* or 2*d.* per lb. is used in summer for keeping fish good, and cooling butter in nearly all well-to-do families, and by thus saving our food it is really an economy.

Ice is also most useful in many cases of illness ; in fevers, spinal affections, etc. etc.

Its use in cooling drinks was known from the most remote antiquity. The manufacture of ices was an invention of the seventeenth century.

Ice can now be artificially produced by machinery, by evaporation, etc. etc., but it is seldom made at home except in wealthy households.

The importance of being able to keep small quantities of ice for various purposes, and especially in sick rooms for medical use, cannot be overrated. Dr. Schwarz has communicated to the public the following simple method, which he has practised with success. He says, "Put the ice in a deep dish or jug, cover it with a plate, and place the vessel on a pillow stuffed with feathers, and cover the top with another pillow carefully, by this means excluding the external air. Feathers are well-known bad conductors of heat, and in consequence the ice is preserved from melting." Dr. Schwarz states that he has thus preserved six pounds of ice for eight days. The plan is simple, and within the reach of every household.

To Keep Ice.

Make a double pocket of any kind of strong woollen cloth, no matter how faded and coarse it is. Have a space of two inches or so between the inner and outer pockets, and pack this space as full as possible with feathers. You have no need to use geese feathers ; hen's feathers are just as good. With a pocket thus constructed, and kept closely tied at the mouth, a few pounds of ice may be kept a week.

Buttermilk.

Buttermilk is a very cooling summer drink. It must be drunk, however, the first day, for it is not fit for drinking afterwards. Sweeten with a little sugar, and add grated nutmeg to taste.

Curds and Whey.

Half a drachm of citric acid to a pint of milk. This will make good curds and whey.

Lemon Tea.

Weak green tea let get cold, and with half a lemon squeezed into it, makes an excellent beverage.

Wine Sangaree.

Put a gill of wine (Port or Madeira) into a tumbler, add to it water, hot or cold, nearly to fill it, sweeten with loaf-sugar to taste, grate nut-

meg over, and serve with sponge-cake or Savoy biscuit, cut small.

Barley Milk.

Half pound of pearl-barley, three pints of milk, one quart of cream, cinnamon and sugar to taste, one pint of sherry.

Boil the pearl-barley in the milk till it is done; add the cream, cinnamon and sugar to taste. When nearly cold, pour into it a pint of Sherry or Marsala; raisin wine also answers very well, and the cream may be omitted.

Simple Barley Water.

Two tablespoonfuls of very clean pearl-barley, two ounces of lump sugar and lemon-juice.

Put the pearl-barley in a jug with the sugar required, fill it up with boiling water, and keep stirring for a few moments, cover, and let it stand till cold. Flavour with lemon-juice or cinnamon.

Barley Water.

The best way.

Half a teacupful of the very best pearl-barley in a quart of water.

Let the barley boil well till it is smooth; then strain it off into a mug; while the barley is boiling, peel one large lemon, or two small ones, as thin as possible, put the peel into a tumbler, pour boiling water over it, and cover it closely. This extracts all the flavour. Add the water from the peel, and the peel itself to the barley-water, with the juice of the lemon (strained from the pips, which would make it bitter); add loaf-sugar to taste. The barley-water must not be too thick, and before the lemon is added, when it is poured from the saucepan, it should be strained through muslin.

Toast and Water.

Fill a jug with boiling water, carefully drop into it a piece of bread toasted *very* brown. Let it stand till cold.

If the water be poured *on* the toast instead of the toast being dropped in, the liquid will look cloudy and discoloured; it ought to look as clear as sherry. Some persons make toast and water with *cold* water; this is very nice when you are quite sure of the goodness of the water itself; but as boiling water destroys much that is bad in it, we think it advisable to boil it first. If the water be cold, the toast had better approach the state of charcoal. But boiling water, with the toast, as we have said, carefully dropped into it, can be strained when it is coloured, and then poured from jug to jug till it is once more filled with carbonic acid from the air.

Rhubarb Tea.

Time, quarter of an hour.

Two pounds of rhubarb-sticks, one lemon, sugar to taste—one quart of water.

Slice the rhubarb, boil it for a quarter of an hour in a quart of water; strain it into a jug, add the juice of one lemon and a little sugar after it is cold.

Apple Tea.

Time, half an hour.

Two pounds of apples, half a lemon, sugar—one quart of water.

Peel, core, and cut up the apples in quarters; boil for half an hour, strain the liquor into a jug, squeeze in the juice of one lemon, and sweeten to taste.

Soyer's Apple Water.

One gallon of water, one pound of apples, half a pound of sugar, a slice of bread.

Boil the water; while it boils cut up the apples in quarters. Boil them till they can be pulped in the boiling water, strain through a colander; boil the strained liquor up again, with half a pound of white sugar—skim well; slowly toast a piece of bread till it gets quite black, and put it in the apple-water—let it get cold. Keep it in bottles, without a cork, in a cool place.

Apple Barley Water.

One gallon of water, one pound of apples, quarter of a pound of pearl-barley, half a pound of white sugar.

Cut up the apples, boil them till they will pulp in boiling water; pass the liquor through a colander, add the sugar, then boil up again and remove the scum; boil a quarter of a pound of barley one hour—add it to the apple-water. Put it into bottles uncorked, and keep for use. Keep it in a cool place.

Apple Water.

Cut some tart apples very small; pour boiling water over them, and set it to simmer gently for half an hour, then strain off the liquor; sweeten to taste.

Apple Rice Water.

One gallon of water, one pound of apples, half a pound of rice, half a pound of lump sugar. Bake the apples, then put them in a pan and add the sugar; pour over them water in which the rice has been boiled to an utter pulp. Pass through a colander. To be drunk when cold.

Mulberry Drink.

Half a pound of mulberries, quarter of a pound of sugar, two quarts of cold water—a little lemon-peel.

Bruise the mulberries, throw the sugar over them, and add a little lemon-peel. Pour in the cold water, stir well, allow it to settle, and strain off for bottling. A very delicious summer drink.

Fig Water.

Quarter of a pound of preserved figs, two quarts of water, half an ounce of ginger.

Boil the figs to a pulp, with the ginger; strain off, and bottle.

French Plum Water.

Half a pound of French plums, two quarts of water, quarter of an ounce of ginger, quarter of a pound of sugar.

Pour water over the plums. Boil them, till pulped, with the ginger. Strain off; boil up again with sugar, and skim well. Bottle for use.

Green Gooseberry Water.

One pound of gooseberries, one gallon of water, quarter of an ounce of ginger, three quarters of a pound of sugar.

Boil the gooseberries in boiling water till they pulp; strain through a colander. Boil up the juice again with the sugar and ginger. Skim well and bottle.

Red Currant Water.

One pound of red currants, half a pound of raspberries, half a pound of sugar, one gallon of cold water.

Put in the fruit, well bruised, together with the sugar pounded. Stir well; let it settle, and strain for bottling.

Currant Water.

Having pressed the juice from ripe currants, strain it clear; put to each pint nearly a pound of white sugar pounded; add cold water (or ice-water if you have it) to your taste; grate in a little nutmeg, and it will be found a fine cooling beverage.

Cherry Water.

Pound a dozen large sour cherries in a mortar, so as to break the kernels, then put them into a tumbler, fill it two-thirds with water, and add sugar to taste. This is a cooling drink.

Capillaire.

Take fourteen pounds of sugar, break six eggs in with the shells, stir with it gradually three quarts of water, set it over the fire, and boil it, and take off the scum until only a light froth rises; add to it a wineglass of orange-flower-water, or half as much lemon-extract with a little vanilla, then strain it through a jelly-bag, and when cold bottle it; cork it tight to keep. A wineglass of this put to a tumbler of ice-water is a cool and refreshing drink.

A glass of wine, brandy or rum may be added.

Cherry Water with Capillaire.

Put a wineglass of capillaire into a tumbler; pound a dozen large cherries in a mortar, so as to break the kernels, then put them in the tumbler, fill it two-thirds with ice-water, and serve with sponge-cakes; or, instead of ice-water, half fill the tumbler with chipped ice then put in water.

A Summer Drink.

Two eggs, one quart of water, two and a half pounds of loaf sugar, two ounces of orange-flower-water, four tablespoonfuls of brandy.

Beat the eggs well, add the pounded loaf sugar and the water; simmer it for an hour, skimming it *well.* Let it cool. Add the orange-flower-water and brandy; strain it through a jelly-bag. A spoonful to a tumbler of water for drinking.

A Cooling Cider Drink.

One teaspoonful of carbonate of soda, as much again powdered loaf sugar, a tablespoonful of brandy, one tumbler of cider.

Mix altogether in a tumbler, and fill up with cider.

Cider Cup.

Grate nutmeg and ginger over a nice toast, put it at the bottom of a jug, pour over it a wineglass of pale brandy. Fill up with cider. Lay borage-leaves at the top.

Cider Cup.

To one quart of cider add one pint of German seltzer-water, a small glass of Cognac brandy, a bunch of borage, a sliced orange, an ounce of sugarcandy; place these in a large jug embedded in ice for an hour and a quarter, then strain the cup, and serve.

Cider Cup.

To one quart of cider add half a lemon squeezed, three tablespoonfuls of powdered lump sugar, two wineglasses of pale brandy, a wineglass of curaçoa, two slices of lemon, with grated nutmeg on the top. Ice well, and serve with borage. A bottle of soda-water is a great improvement.

Toast and Cider.

Take some thin crisp rounds of toast without crust, lay a round in the bottom of a punch-bowl, on this sift some powdered sugar and a little brandy; then another layer of toast with sugar and brandy, and continue till the bowl is rather more than half full. Sweeten (if it be needed) two quarts of cider, throw in some cloves, and when the whole is very hot (do not let it boil) pour it on the toast, and cover the bowl down closely. In an hour it will be ready for distributing

in saucers. New or fresh cream cheese should be eaten with it.

Ginger Cool Drink.

To six gallons of water, put eight pounds of common loaf sugar, the whites of three eggs well beaten up, and three ounces of the best ginger finely powdered and well mixed with a little water before it is added to the rest. Let it boil gently, and take off the scum thoroughly; it should boil one hour; let it cool, and then add the juice of three large lemons, and also the peel, taken off as thin as possible, and without any of the white; before it is quite cold, add to it rather more than a tablespoonful of yeast, and then put the whole in a cask and bung it up very tight, let it stand for a fortnight more, when it will be fit for use.

Claret Cup.

One bottle of claret, one of soda-water, one small glass of brandy, and a lump of ice.

Claret Cup.

One bottle of claret, one bottle of soda-water, one glass of brandy, one strip of cucumber, peel of half a lemon, one large lump of ice; sugar to taste.

Expensive Claret Cup.

Two bottles of claret, one of champagne, three glasses of sherry, one of noyau, half pound of ice, a few slices of cucumber; sugar if required.

Lay a sprig of flowering borage on the top of these cups.

The "Blues" Cup.

Four quarts of water, two bottles of cider, one bottle of perry, one pint of sherry, two large glasses of brandy, sprig of borage.

Champagne Cup.

One bottle of champagne, two bottles of soda-water, one glass of brandy, one pound of ice, a sprig of flowering borage, or two or three slices of cucumber, and two ounces of powdered sugar.

Champagne Cup.

One bottle of champagne, three wineglasses of sherry, one glass of curaçoa, four slices of lemon, two slices of cucumber (or peel), one of pineapple, one bottle of soda-water, half a pound of ice.

Porter Cup.

One quart of porter, half a pint of sherry, four slices of lemon, and a little nutmeg. A large lump of ice.

Sherry Cobbler.

Half a pint of sherry, a little mint, a tablespoonful of sugar, a large quantity of pounded ice, two slices of lemon, a bottle of soda-water—all mixed together.

American Temperance Beverage.

Twelve lemons, one quart of picked raspberries, one ripe West Indian pine-apple, two pounds of double refined sugar, three quarts of iced water.

Peel the lemons very thin, squeeze the juice of all over the peel, and let it stand all night (or some hours) to get out the essence. Add to it two pounds of double refined sugar. To the raspberries, put half a pound of same sugar; pare the pine-apple and cut it in slices; lay between them half a pound of sugar. Strain the lemon-juice, crush the raspberries, press the pine, then put the lemon-juice into a bowl—add to it three quarts of iced water; add the strawberries and pine-apple. Stir all till the sugar is entirely dissolved with

the juices. Set the bowl on ice an hour before serving.

A delicious beverage.

Champagne Beverage.

Twelve lemons, one bottle of champagne, one quart of strawberries, one pound and a half of sugar.

Peel the lemons very thin, squeeze the juice over the peel, and let it stand to draw out the essence; add one pound of sugar to the lemon-juice. Crush the strawberries up with half a pound of double refined sugar.

Put the lemon-juice into a bowl, add the strawberries and stir till all juice is expressed. Add two quarts of iced water, and one bottle of champagne; half a pound of ice thrown in it.

Mint Julep.

Prepare as above, and to the lemon and raspberry juice may be added, *instead of champagne*, half a pint of brandy and half a pint of rum, finely chopped ice, and sprigs of fresh green mint.

Red Wine Cup.

For either French or Austrian Red Wines.

To each bottle of red wine add two bottles of soda water, half a pint of good brown sherry, a liqueur glass of curaçoa, a few slices of fresh lemon; sugar and ice.

Sparkling or Still Moselle Cup.

To each bottle of Moselle add one bottle of soda water, a glass of good sherry or brandy, a few slices of pine apple, the peel of a lemon cut very thin, sugar and ice.

Loving Cup.

One pint of mountain wine, one pint of Madeira, one pint of Malmsey, (or Calcavella, Lisbon, or any other sweet white wine), one bottle of champagne, a liqueur glass of good pale brandy, three thin slices of lemon; sugar, nutmeg, and ice.

Sparkling Wine Cup.

For Champagne, Burgundy, or Hock.

To each bottle of the above add one punnett of strawberries, one liqueur glass of curaçoa, or brandy, sugar, and ice; also one bottle of soda water if approved. The above may be varied according to taste or the season, by substituting other fruit, such as raspberries, pine-apples, pears, etc.

Orange Brandy.

The peel of six lemons, the peel of eight Seville oranges, three and a half pounds of loaf sugar, one scruple of saffron; steep the above in one gallon of pale brandy for forty-eight hours, stirring it very frequently, after which let it settle and bottle.

The remains will be useful for making cakes.

To keep Lemon Juice.

To every pint of juice put a pound of double refined sugar; stir it until the sugar is quite dissolved; then bottle it. Put a teaspoonful of salad oil on the top and cork it close. When wanted for use apply a bit of raw cotton to the oil, and it will immediately be absorbed. Keep it in ounce phials. Put a large tablespoonful of this juice to half a gill of iced water for drinking; or for hot lemonade use boiling water.

Lemonade.

Twelve lemons; one pound of loaf sugar. Peel the lemons very thinly. Squeeze the juice from twelve fine lemons, taking care to strain it well from pips; put to it one pound of loaf sugar; pour a little boiling water

on the peel and let it stand to infuse, covering it closely. When cold, strain this water from the peel into the juice and sugar. Put it into decanters for present use. One wine-glass to half a pint of water.

Slice a lemon as thin as possible, and add a slice to each glass of lemonade.

The addition of a piece of pine apple to each glass gives a delightful flavour.

Orange and Lemon Beverage.

One lemon ; six oranges ; one pint of water; one pound of sugar; add water to taste.

Peel both the lemon and oranges, cover the peels with boiling water, and let them infuse, covering them closely. Squeeze the juice of oranges and lemon. Boil the water and sugar together to a syrup, skimming it clear. When the syrup and peel-water are cold, mix them, straining the water from the peel into the syrup ; then add the juice ; stir it well. Add as much water as will make it a pleasant drink, and a few lumps of ice.

Lemonade to be made the Day before Wanted.

Pare two dozen lemons as thin as possible, put eight of the rinds into three quarts of hot, not boiling, water, and cover it over for three or four hours ; rub some fine sugar on the other lemons to attract the essence, and put it into a china bowl, into which squeeze the juice of the lemons. To it add one pound and half of fine sugar, then put the water to the above, and three quarts of milk made boiling hot ; mix and pour through a jelly-bag till perfectly clear.

Lemonade.

Pare a number of lemons according to the quantity you are likely to want ; on the peels pour hot water, but more juice will be necessary than you need use the peels of. While infusing, boil sugar and water to a good syrup, with the white of an egg whipt up ; when it boils, pour a little cold water into it ; set it on again, and when it boils up, take the pan off, and put it to settle. If there is any scum, take it off, and pour it clear from the sediment to the water the peels were infused in, and the lemon juice ; stir and taste it, and add as much water as shall be necessary to make a very rich lemonade, then strain the liquor, which is uncommonly fine, through a jelly-bag.

Lemonade that has the Flavour and Appearance of Jelly.

Pare two Seville oranges and six lemons as thin as possible, and steep them four hours in a quart of hot water ; boil a pound and a quarter of loaf sugar in three pints of water, and skim it ; add the two liquors to the juice of six China oranges, and twelve lemons ; stir the whole well, and run it through a jelly-bag till clear ; then add a little orange water if you like the flavour, and, if wanted, more sugar. It will keep well if corked.

Lemon Whey.

Boil as much milk as you require ; squeeze a lemon, add as much of the juice to the milk as will make it *quite clear.* Mix with hot water and sweeten to taste.

Lemon Powder.

Half an ounce of tartaric acid ; three ounces of loaf sugar ; essence of lemon, half a drachm.

Powder both the sugar and the tartaric acid ; mix them, and pour the lemon essence on them, two or three drops at a time. When it is mixed, dry the powder by keeping it a little while in the air, and then

divide it into twelve equal parts, and put each powder in white paper, if you like, but it is best to bottle the powder and keep it corked. One-twelfth part dissolved in a tumbler of water will make good lemonade.

Soyer's Lemonade.

Three lemons; half a pound of sugar; one gallon of water.

Cut the lemons in very thin slices; take out the pips; put them in a bowl; add the sugar; bruise well together; add a gallon of water; stir well. It is then ready to use.

Half the quantities will suffice in some instances.

Citric Acid Lemonade.

One ounce of citric acid; twenty-two drops of essence of lemon; one pound and a half of loaf sugar; three-quarters of a pint of water.

Boil the sugar in the water for a few minutes; skim it; when half cold mix the other ingredients with it. Stir well together, and bottle for use. Two tablespoonfuls with a tumbler of water makes a refreshing drink.

Milk Lemonade.

Two lemons; two pounds of loaf sugar, powdered; one quart of white wine; three quarts of quite fresh boiling milk.

Wash the lemons, then peel them very thinly; squeeze the juice over the peel, and let it stand all night. In the morning add to it the sugar, powdered, the wine, and the milk boiling hot; strain it once or twice through a jelly-bag till it is clear. A delicious beverage.

Lemon Water.

One lemon; one pint of water; sugar to taste.

Cut a small fresh lemon in thin slices; put them in a jug; pour over them a pint of boiling water; cover it and let it stand till cold; sweeten to taste.

Cider Cup.

One gill of sherry; a bottle of cider; two ounces of sugar; one glass of brandy; a sprig of borage; a large lump of ice; one slice of lemon.

Put into a glass jug or tankard the sherry, the brandy, lemon, and sugar; add a large lump of ice; pour in the cider, and lay a sprig of borage at the top.

Cool Cider Cup.

Take one bottle of cider, half a pint of good brandy or whisky, a quarter of a pound of finely-pounded loaf sugar, and a large tumblerful of pounded ice. Mix and serve it in glasses. This will be found a cool and delicious summer drink, and suitable at any time. It will be much approved if a pint of good old sherry be substituted for the brandy or whisky, and a bottle of soda water or lemonade be added, with some grated nutmeg; or if half the quantity of brandy with half a pint of sherry be used.

Ale Cup.

One bottle of soda water; one piece of toasted bread; a little ginger and nutmeg; one wineglass of brandy; a lump of ice; one quart of pale ale.

Make a nice toast, grate on it some ginger and nutmeg; put it at the bottom of a jug; pour over it the brandy and pale ale; pour in the soda water; add the ice.

Badminton Cup.

Half a cucumber; quarter of a pound of sugar; one bottle of claret; one bottle of soda water; a lump of ice.

Mix when the sugar is dissolved in the claret; add the soda water and ice.

Orange Water.

Four oranges; boiling water.

Peel four oranges; pound the peel in a mortar; pour boiling water over it, and cover it close. When cold, bottle for use.

Rose Brandy.

Put freshly gathered rose-leaves into a bottle, cover them with brandy, and let them infuse. Bottle and keep. A dessertspoonful in a bottle of soda water to drink.

Cranberry Water.

Put a teacupful of cranberries into a cup of water, and mash them. In the meantime boil two quarts of water with one large spoonful of oatmeal, and a slice of lemon peel; then add the cranberries, and as much fine Lisbon sugar as will bring out the flavour of the fruit, and about a quarter of a pint of sherry; boil the whole for half an hour, and strain it.

Lemon Tea.

Put two slices of lemon thinly pared into a teapot, a little of the peel, and a little sugar, or a large spoonful of capillaire; pour in a pint of boiling water, and stop it closely for two hours.

To make Simple Sugar Syrup.

Proportions: one pound of sugar to half a pint of water.

Put half a pint of water to each pound of sugar; when it is all dissolved set it over a gentle fire, let it boil for half an hour, skimming it; when it is clear and boiling hot, spread a wetted napkin over a basin, pour the syrup in, and strain it through; flavour to taste.

Pineapple Syrup.

Take the rough coat from a ripe pine-apple, cut it small, and pound it fine; put a teacup of water to it, and squeeze the juice from it through a cloth; put this to enough simple syrup to flavour it; boil it over a gentle fire for a short time; when cold bottle it. Mix it with water to your taste; set it on ice; serve in small tumblers.

Lemon Syrup.

Make a simple sugar syrup, add extract of lemon.

Vanilla Syrup.

Flavour simple sugar syrup with extract of vanilla.

Strawberry Syrup.

One pint of juice to one pint of syrup. For syrup: one pint of water to one pound of sugar.

Make a syrup by boiling, in the proportion of one pound of sugar in a pint of water, skimming it till quite clear. Crush some fine strawberries in a sieve and press out all their juice. To every pint of juice put one pint of syrup. Boil together gently for an hour; then let it become cold, and bottle it. Cork and seal it. When used, reduce it to taste by adding iced water to it, or set it on ice and add water.

Strawberry Sherbet.

Fourteen ounces of picked strawberries; one quart of water; one lemon; one teaspoonful of orange-flower water; eighteen ounces of sugar.

Crush the strawberries in a mortar; then add to them a quart of water. Pour this into a basin with a lemon sliced and a teaspoonful of orange-water; let it remain for two or three hours. Put eighteen ounces of powdered white sugar into another basin; cover it with a cloth, through which pour the strawberry juice; after as much has run through as can, gather

up the cloth and squeeze out as much more as possible. When the sugar is all dissolved, strain it again; set the bowl or jug containing it on ice, until ready to serve.

Strawberry Vinegar.

Take the stalks from the fruit, which should be a highly-flavoured sort, quite ripe, and gathered in dry weather; weigh, and put them into large wide-necked bottles, and to each pound pour about a pint and a half of fine, pale, white wine vinegar. Tie a thick paper over them, and let the strawberries remain from three to four days; then pour off the vinegar, and empty them into a jelly-bag, or suspend them in a cloth, that all the liquid may drop from them without pressure: take an equal weight of fresh fruit, pour the vinegar upon it, and three days afterwards repeat the same process, diminishing a little the proportion of strawberries, of which the flavour ought ultimately to overpower the vinegar. In three days drain off the liquid, and, after having strained it through a flannel bag, weigh it, and mix it with an equal quantity of highly refined sugar, roughly powdered; when this is nearly dissolved, stir the syrup over a very clear fire until it has boiled five minutes, and skim it thoroughly; pour it into a delicately clean pitcher; throw a folded cloth over, and let it remain until the morrow; then put it into pint or half pint bottles, and cork them tightly with new corks, not pressed in too tightly at first, as the bottles would be liable to burst. In four or five days they may be closely corked, and stored in a dry and cool place.

A dessertspoonful to a tumbler of water for drinking.

Strawberry Acid.

Three pounds of strawberries; one and a half ounces of tartaric acid to one pint of water; lump sugar.

Put the water and the tartaric acid into a deep pan, let the acid dissolve, add the fruit. It must stand covered over for twenty-four hours; then strain it off, and to every pint add one and a half pounds of loaf sugar, stir it well, and when the sugar is dissolved, bottle it, and seal it up. This quantity makes three bottles.

Add a dessertspoonful to a tumbler of water for drinking.

Blackberry Syrup.

Make a simple syrup of a pound of sugar to each pint of water, boil it until it is rich and thick, then add to it as many pints of the expressed juice of ripe blackberries as there are pounds of sugar; put half a nutmeg grated to each quart of the syrup; let it boil fifteen or twenty minutes, then add to it half a gill of fourth-proof brandy for each quart of syrup, set it to become cold, then bottle it for use.

A tablespoon for a child, or a wineglass for an adult, is a dose for sore throat.

Mulberry Syrup.

Put some mulberries into a jug, tie a paper over it, and then put it up to the neck in a kettle of water, let it boil; as the liquor rises from the mulberries, drain it off; to each pint of it put one pound of white sugar, or brown sugar clarified; set it over a slow fire, and boil until about the consistence of molasses, then skim it, and take it off; when cold bottle it.

Orange Sherbet.

Squeeze the juice from oranges, pour boiling water on the peel, and cover it closely; boil water and sugar (a pint to a pound) to a syrup, skim it clear; when all is cold, mix the

syrup and juice, with as much water as may be necessary for a rich taste; strain it, and set a vessel containing it on ice; or it may be made the same as lemonade, using one lemon with half a dozen oranges.

Imperial.

Put two ounces of cream of tartar and the juice and parings of two lemons into a stewpan, pour on them seven quarts of boiling water, stir and cover close; when cold sweeten with loaf sugar, and straining it, bottle and cork it tight. This is a very pleasant liqueur, and very wholesome.

Imperial.

Two gallons of water, four lemons, two pounds of sugar, one ounce and a half of cream of tartar. These proportions mixed are excellent.

Imperial.

Four ounces of cream of tartar, four pounds of loaf sugar, juice and peel of four lemons; boiling water fourteen quarts; when cold bottle and cork.

Nectar.

Half a pint of spring water; thirty-five grains of carbonate of soda; one teaspoonful of tincture of orange peel; one tablespoonful of capillaire, to be well mixed, and then add thirty-five grains of tartaric acid.

Orgeat.

Half a pound of shelled almonds; half a gallon of water; twenty-two drops of lemon essence; two pounds of sugar; ice. Put the almonds into hot water and rub off their skins. Pound them in a mortar to a fine paste, adding a little water occasionally to keep them from oiling.

Take half a gallon of clear and good spring water; add to it enough lemon essence to flavour it well; add it to the paste with two pounds of powdered loaf sugar. Beat it well together; then strain it through a jelly-bag two or three times, stirring it with a wooden spoon. Pour it into a claret jug, lay a bay leaf on the top, add ice when required to drink.

Orgeat.

Boil a quart of new milk with a stick of cinnamon; sweeten to your taste, and let it grow cold; then pour it by degrees to three ounces of almonds, and twenty bitter almonds that have been blanched and beaten to a paste, with a little water to prevent oiling; boil all together, and stir till cold, then add half a glass of brandy.

Orgeat.

Blanch and pound three-quarters of a pound of sweet almonds, and thirty bitter, with a spoonful of water; stir in by degrees two pints of water, and three of milk, and strain the whole through a cloth. Dissolve half a pound of fine sugar in a pint of water; boil and skim it well; mix it with the other, as likewise two spoonfuls of orange-flower water, and a teacupful of the best brandy.

Instantaneous Ginger Beer.

Take about a pint and a half of water, four teaspoonfuls of ginger, and a tablespoonful of lemon juice—sweeten it to the taste with syrup or white sugar. Have ready an ordinary glass bottle, a cork to fit the bottle, a string to tie it down, and a mallet to drive down the cork. Put into the bottle a heaped teaspoonful of the supercarbonate of soda, pour in the liquor, cork immediately, tie it down, then shake the whole up well, cut the string, and the cork will fly out. Turn it out and drink immediately.

Gingerette.

Pour one quart of good gin over two pounds of washed currants; add the peel of two lemons cut *very thin*, and let it stand three days. Then strain it, and add one ounce of the finest ginger bruised, and one pound of loaf sugar to each pint. Let it stand a few days, stirring it once a day. Then strain it again and bottle it for use.

China Orange Juice.

Squeeze from the finest fruit a pint of juice; strain it through fine muslin, and gently simmer it with three-quarters of a pound of double-refined sugar for twenty minutes; when cold put it in small bottles, and mix it with water when used. This is a cool drink for fevers.

Capillaire Drink.

Into a tumbler of fresh cold water pour a tablespoonful of capillaire, and the same of good vinegar.

Tamarinds, currants, fresh or in jelly, or scalded currants or cranberries, make excellent drinks, with a little sugar, or not, as may be agreeable.

Herb Tea.

Put a little tea sage, two sprigs of balm, and a little wood-sorrel into a jug, having first washed and dried them; cut thin a small lemon, and clear it from the white; slice it, and put a piece of the peel in; then pour in three pints of boiling water; sweeten, and cover closely.

Barley and Capillaire Drink.

Wash an ounce of pearl barley; change the water twice; then put to it three pints of water, an ounce of sweet almonds beaten fine, and a piece of lemon peel; boil till you have a smooth liquor; then put syrup of lemons, and capillaire.

Tamarind Water.

Boil three pints of water with an ounce of tamarinds; three ounces of currants, and two ounces of stoned raisins, till nearly a third is consumed; strain it on a piece of lemon peel, which remove in an hour, as it gives a bitter taste if left too long.

Raspberry Acid.

Three pounds of raspberries; one ounce and a half of tartaric acid to a pint of water.

Put the water and fruit into a deep pan with the tartaric acid dissolved in it; let it stand for twenty-four hours covered over; then strain off the juice, and to every pint of it add one pound and a half of loaf sugar; stir it well, and when the sugar is dissolved, bottle and seal it up. This quantity will make three bottles full. A desertspoonful to a tumbler of water.

Raspberry Syrup.

Time, one hour.

To one pint of juice, one pint of syrup.

Take some fine red raspberries; crush them in a sieve, and press the juice from them. To each pint of it add a pint of simple syrup (that is, sugar boiled in water—one pint of water to a pound of sugar, well-boiled and skimmed). When the syrup and juice are mixed, boil them gently for one hour, then let it become cold; bottle, cork, and seal it. When used reduce it to taste with water, and set the jug in ice.

Raspberry Sherbet.

Fourteen ounces of picked raspberries; one lemon; three tablespoonfuls of brandy; one teaspoonful of orange-flower water; one quart of water ice; eighteen ounces of sugar.

Crush the raspberries in a mortar,

add to them a quart of water, with the lemon sliced, and the orange-flower water; let it stand two or three hours; put eighteen ounces of sugar into another basin; cover it with a clean cloth, and pour the juice through it; when it will run no longer lift up the cloth by the corners and squeeze it with a spoon. When the sugar is all dissolved strain again, and add the brandy and a lump of ice. Set it in ice till required.

Raspberry Vinegar.

Put a pound of sifted loaf sugar to a pint of raspberry juice; mix it well together, and then strain it; to every pint of syrup put three half pints of white wine vinegar; fine fruit is preferred, as the syrup must be as thick as cream. Let it stand one day, then put it into bottles.

Raspberry Vinegar and Drink.

Pour one gallon of brown vinegar on two gallons of raspberries; let it stand forty-eight hours, and then strain it through a flannel bag without pressure.

Raspberry Drink.

To one pint of the above add two pounds of lump sugar; when quite dissolved, to be mixed with cold water as a beverage.

The vinegar will keep for years.

Raspberry Beer.

Half an ounce of cream of tartar; one pound of loaf sugar; one gallon of boiling water; mix and stir well; when nearly cold add a tablespoonful of yeast; let it ferment in a pan, and then add a glass of raspberry vinegar. Bottle it and tie down, it will be fit for use in a few days.

Syllabub.

One bottle of white wine, quarter of a pound of sugar, two quarts of milk.

Pour the wine into a bowl, add the sugar and a little nutmeg; milk on it from the cow two quarts of milk. Well froth the milk.

Devonshire Syllabub.

One bottle of sherry, quarter of a pound of loaf sugar, two quarts of milk, half a pint of clotted cream—cinnamon.

Pour the wine into a bowl, add sugar, and flavour with cinnamon. Milk the cow on the wine till the bowl is full; well froth the milk, then lay at the top the clotted cream.

Syllabub.

Take the juice of a large lemon and the yellow rind pared thin, a glass of brandy, two glasses of white wine and a quarter of a pound of powdered sugar. Put these ingredients into a pan, and let them remain one night, the next day add a pint of thick cream and the whites of two eggs beaten together, beat them altogether to a fine froth; serve it in jelly-glasses.

Bishop.

Roast a lemon, and stick it full of cloves; meantime, boil in a pint of water equal quantities of spice to suit the palate, such as mace, cinnamon, cloves, etc. Put the lemon into a bowl, and pour over it the extract from the spices. Now add a bottle of port, made nearly boiling, and sweeten the whole with loaf sugar. Bishop may also be made with claret, or equal parts of port and claret.

Spruce Beer.

To make White Spruce Beer.—To ten gallons of water put six pounds of sugar and four ounces of essence of spruce; then add yeast, and work it as in making ginger-beer. Bottle immediately in half-pint bottles.

Brown Spruce Beer.—This beer is made in the same manner as the preceding, only treacle is substituted for the sugar. It is an exceedingly wholesome summer drink, especially for persons afflicted with pains of the kidneys.

Punch.

One of sour, two of sweet, four of strong, eight of weak, is the formula for making excellent punch.

An Excellent Method of Making Punch.

Take two large lemons, with rough skins, and some lumps of sugar. Rub the sugar over the lemons till it has absorbed all the yellow part of the skins; then put into the bowl these lumps, and as much more as the juice of the lemons may require, for no certain weight can be mentioned; then squeeze the lemon-juice upon the sugar, and with a bruiser press the sugar and the juice well together, for the richness and fine flavour of the punch depends on the rubbing and mixing process being thoroughly performed. Then mix this up very well with boiling water (soft water is best), till the whole is rather cool. When this mixture is to your taste, take brandy and rum in equal quantities, and put them to it, mixing the whole altogether again. The quantity of liquor must be according to your taste; two good lemons are generally enough to make four quarts of punch, including a quart of liquor, with half a pound of sugar; but this depends on taste, and on the strength of the spirit. As the pulp is disagreeable to some people, the sherbet may be strained before the liquor is put in. Some strain the lemon before they put it to the sugar, which is improper; as, when the pulp and sugar are well mixed together it adds to the richness of the punch.

When only rum is used, about half a pint of porter will soften the punch; and when both rum and brandy are used, the porter gives a richness and, to some, a very pleasant flavour.

Whisky Punch.

Pour half a pint of the spirit on the peel of a lemon, taken off *very thin*, and the lemon cut into very thin slices after the whole of the white part has been carefully taken off. Let it stand one hour, then add a sufficient quantity of sugar, with a glass of Curaçoa, about a pint of water, and two bottles of iced soda-water.

George the Fourth Milk Punch.

Time, eighteen hours.

Take two quarts of rum, put the peel of twelve lemons and two Seville oranges into it, and let it stand twelve hours, then add two quarts of cold spring water, one pound of loaf sugar, one pint of lemon-juice, one nutmeg, one pint of strong green tea, quarter of a pint of maraschino, one pint of Madeira; mix together, and stir in a pint of new milk *boiling hot;* let it stand six hours till quite clear; then bottle it for use.

Milk Punch.

Infuse the peel of twelve lemons, cut very thin, in one quart of the best brandy, for forty-eight hours; dissolve two pounds of treble refined sugar in seven pints of cold water; put to it the brandy that the peel has been infused in, with two quarts more brandy and one of rum, with the juice of the twelve lemons and one grated nutmeg; then take three pints of milk *scalding hot*, and throw it in; let it stand altogether

twelve hours, and then run it through a jelly-bag till it is clear.

Milk Punch.

The rinds of six lemons to stand in a bottle of rum three days (or more). Then add one quart of lemon-juice, three quarts of water and five of spirits, three pounds of loaf sugar and two grated nutmegs; mix them all well together, and add two quarts of boiling milk; let all stand four or five hours, then fine it through a flannel bag, and bottle it off.

The bottle must be filled with lemon-peel, cut *very* thin, before you put the spirit in.

Cold Punch.

Take half a pound of loaf sugar in lumps, rub each lump over a lemon to draw out the essence of the peel; squeeze the lemon-juice over the sugar, pour over it half a pint of rum or whisky; let it stand twenty minutes, and add three pints of cold water and a large lump of ice.

Cool Tankard.

One quart of ale, one glass of sherry, one of brandy, one of capillaire, the juice of a lemon, four ounces of cream of tartar. Mix and strain half an ounce of sugarcandy, quarter of an ounce of cream of tartar, a few lemon and orange chips. Pour upon them one quart of boiling water. When cold strain it off.

Drink for a Sick Room.

Put a teacupful of cranberries into a cup of water, and soak them. In the mean time boil two quarts of water with a large spoonful of oatmeal and a piece of lemon peel; then add the cranberries and as much loaf sugar as will leave a slight acid flavour of the fruit, and a quarter of a pint of sherry (or less). Boil all for half an hour, and strain it off.

Brandy Bitters.

Steep a quarter of a pound of dried orange and lemon peel, and half an ounce of fresh peel, in one pint of good brandy for ten days, frequently shaking it; then press out the liquor and filter through blotting paper; lastly, dissolve two ounces of loaf sugar therein. This is a very pleasant bitter, either taken alone or mixed with other liquor.

Ginger Cordial.

To each pint of strained white currant juice add one quart of best Scotch whisky, half an ounce of ginger bruised, one pound of best loaf sugar and the rind of a lemon. Put it into a jar, tie it down very closely, and let it stand twenty-four hours. Then strain it through a jelly-bag, or filter through paper, the latter is best. Bottle and cork it well. In two years it will be in perfection.

Imperial Water.

Put a quarter of an ounce of cream of tartar and the peel of a lemon, cut very thin, into a jug, pour upon them a quart of boiling water, sweeten it with loaf sugar, stir it with a silver spoon, let it stand about ten minutes, then strain it through fine muslin, and put it into a decanter for use.

Cold Caudle.

Boil a quart of spring water; when cold add the yolk of an egg, the juice of a small lemon, six spoonfuls of sweet wine, sugar to your taste, and syrup of lemons one ounce.

To Mull Wine.

Boil some spice in a little water till the flavour is gained, then add an equal quantity of port, some

sugar and nutmeg; boil together and serve with toast.

Mulled Wine.

Boil a piece of cinnamon and some grated nutmeg a few minutes in a large cupful of water; then pour to it a pint of port wine, and add loaf sugar to your taste. Beat it up, and it will be ready.

Lemonade Shrub.

The juice of eight lemons; barberry juice, three ounces; loaf sugar, four ounces; white wine, half a pint; and the rinds of four of the lemons rubbed off on the sugar. Mix the whole together, and pass it through a filtering bag. Bottle, and use for making lemonade or sherbet.

Shrub, as made in the West Indies.

One quart of rum, half a pint of lime juice, one pound and a half of sugar. Dissolve the sugar in the lime juice, and then mix it well with the rum. Put it into a jar to settle and become mellow. This is excellent for making punch.

Claret Cup Essence.

Cut the peel from six lemons, very thin, and put it into a large covered jug; add six leaves of borage, half a pound of sugarcandy, half a pint of pale French brandy, and one bottle of sherry. Cover the jug, and let it stand three days; then strain it through very fine muslin, and bottle it for use. When required, add one wineglassful to a bottle of claret, and a bottle of soda water.

Eggs.

An egg broken into a cup of tea, or beaten and mixed with a glass of cold milk, makes a breakfast more supporting than tea solely.

An egg divided, and the yolk and white beaten separately, and each mixed with a glass of wine, will afford two very wholesome draughts, and prove lighter than when taken together.

Noyau.

Take a gallon of pale-coloured rum and half a gallon of whisky (or gin), a pound and a half of sweet almonds, and half a pound of bitter, blanch them, and put them into the spirit. Take nine pounds of single refined sugar, make it into a syrup, with four and a half English pints of water, and the whites of four eggs. Pour it boiling hot into the spirit. Let it stand for three weeks, shaking it very often; then strain it through a jelly-bag, let it stand a month to clear, filter the grounds through blotting paper doubled.

If you wish to have it coloured, put in one shilling's worth of cochineal pounded, when the ingredients are cold and before it is strained.

Noyau of Beech Leaves.

Two handfuls of *beech-leaves* steeped six days in a quart of British gin, two pounds of refined loaf sugar boiled in a pint of water, skimmed, and poured off quite clear. When cold mix and bottle.

Shrub.

One pint of Seville orange juice, two pounds of white sugar, three pints of rum or brandy; when the sugar is dissolved, strain through a jelly-bag and bottle it.

Currant Shrub.

One pint of red currant juice, one quart of rum, and a quarter of a pound of loaf sugar.

Add the currant juice and rum to a quarter of a pound of loaf sugar pounded, and when the sugar is dissolved, and all well mixed, strain it through a flannel bag, and bottle it for use.

Curacoa.

Put into a bottle, with the neck large enough to take in an orange, one quart of French brandy, one Seville orange, one stick of vanilla as thick as the little finger and as long as your hand, cork it well, and cover it over with a cloth; stir it once a week for six weeks, then strain the liquor from the orange and vanilla, and bottle it for use.

Ratafia.

Two ounces of peach and apricot kernels, brandy, half a pound of white sugarcandy, one cup of cold water.

Blanch two ounces of peach and apricot kernels, bruise, and put them into a bottle, and fill it nearly up with brandy. Dissolve half a pound of white sugarcandy in a cup of cold water, and add it to the brandy.

Maraschino.

Maraschino is a liqueur distilled from cherries, but it can be imitated either with almonds or oranges.

To a quart of cream of the valley add two ounces of blanched bitter almonds bruised to a paste in a mortar; add nearly half a pound of sugar candy; mix and let it stand for a fortnight; strain it. In a month from beginning to make, it will be fit for use.

Maraschino of Oranges.

Take one quart of gin, three Seville oranges, and a large lemon, peel them very thin, and steep the peel in the gin with three-quarters of a pound of sugar candy; let it stand five days; stir it frequently and run it through filtering paper. Then bottle for use.

Cherry Brandy.

Cherries; four tablespoonfuls of white powdered sugar, and some brandy.

Fill your bottles with cherries, the quantity of sugar not to exceed four tablespoonfuls to each bottle, throw in at *intervals* the cherries, and fill the bottle quite full of brandy; cork it tight, and put a bladder over it. On *no account* prick the cherries.

Wine Flip.

Separate the yolks from the whites of six new-laid eggs, and whisk the yolks until they become a thin fluid. Put a quart of port wine into a saucepan over a clear fire, with a little grated nutmeg, a few cloves, one blade of cinnamon, and a few slices of lemon peel cut very thin, add sugar to your taste. Let it simmer for a short time, then pour it into a bowl into which you have previously put the beaten yolks of the eggs, stirring it quickly with a spoon as you pour in the wine. Beat the whites to a *good froth*, and place it over the ingredients in the bowl.

Serve for it champagne glasses.

HOME-MADE WINES.

Elder Wine.

To five gallons of ripe elderberries put ten gallons of water, boil them with the water for a quarter of an hour, then strain them through a *hair-sieve*, not pressing the berries; measure the liquor into the boiler again, to every gallon add three pounds and a half of sugar with the *thin* peels of six lemons; let it boil twenty minutes; when scalding hot beat up the *white* of four or five eggs and put them into it, stirring the liquor well about; when the liquor is sufficiently *cooled* to add the yeast on the top of a piece of toasted bread, add the juice of six lemons; when ready to be bunged up hang a gauze bag filled with bruised ginger in the middle of the cask.

Ginger in proportion of half a pound to ten gallons of wine.

Dandelion Wine, or Taraxacum.

To one gallon of water put three quarts of dandelion blossoms, three pounds of raw sugar, two sweet oranges and two lemons.

Pour boiling water over the flowers the day they are gathered, and let them stand all night in a tub, but do *not cover them over*. Strain the liquor off next morning, and boil it with the sugar about half an hour. Pare the oranges and lemons very thin, then take off all the white, bruise them well, and put them into the liquor with the peels when milk warm, with half a teacupful of yeast; let it stand a week or ten days before putting it into the barrel. In three months bottle it and put two lumps of loaf sugar in each bottle.

Elder Wine with Cider.

Bake the elderberries in a large stone jar well stopped down; to each quart of juice put three quarts of cider; to every gallon put two pounds of the best Lisbon sugar, four pounds of raisins stoned and chopped fine, two ounces of nutmegs ground, two ounces of cloves, two ounces of mace, and one ounce of cassia, all slightly bruised in a mortar, and two ounces of bitter almonds. Put all into a cask except the liquid which you must work in a tub. Put a slice of toasted bread and a large spoonful of yeast on it, let it work for one day and a night, then take off the scum, and put it also into the cask. When it ceases to hiss, put in half a pint of brandy to every gallon of liquor. If not made with very good strong cider, one pint of the best brandy will not be too much for each gallon. Stop it down close; let it remain in the cask two months, then bottle it. The longer it is kept, the better it becomes.

White Elder Wine.

Boil eighteen pounds of white powdered sugar with six gallons of water, and two whites of eggs well beaten; then skim it, and put in a quarter of a peck of elder-flowers from the tree that bears white berries. Do not keep them on the fire. When near cold, stir it, and put in six spoonfuls of lemon juice, four or five of yeast, and beat well into the liquor, stir it every day. Put six pounds of the best raisins, stoned, into the cask, and tun the wine; stop it close, and bottle in six months. When well kept this wine will pass for Frontignac.

Malt Wine.

With every three pints of water boil three pounds of sugar as long as any scum rises, which must be taken off, then pour it into a vessel, and

when sufficiently cool, add to each three quarts of water one quart of the best rum, and set it with yeast.

Parsnip Wine.

Take fifteen pounds of sliced parsnips and boil until soft in five gallons of water; squeeze the liquor well out of them, run it through a sieve, and add three pounds of coarse lump sugar to every gallon of liquor; boil the whole for three quarters of an hour; when it is nearly cold, add a little yeast on toast; let it remain in a tub for ten days, stirring it from the bottom every day; then put it into a cask for a year; as it works over, fill it up each day.

Ginger Wine.

To every gallon of water add one pound and a half of loaf sugar and half an ounce of ginger finely bruised; boil the whole together for one hour, and then pour it into a tub to cool; when cool, take as many lemons as you have gallons of water, peel them very thin, and add the juice and the peel to the liquor; then work it with a small quantity of good yeast spread on a piece of toasted bread; when it has fermented twenty-four hours put the whole together into a cask, and at the end of six weeks bottle it, care being taken not to shake it, that it may draw off clear. After it has been a month in bottle, it will be fit for use.

Excellent Raisin Wine.

To every gallon of spring water put eight pounds of fresh smyrnas in a large tub; stir it thoroughly every day for a month; then press the raisins in a horse-hair bag as dry as possible; put the liquor into a cask, and when it has done hissing, pour in a bottle of the best brandy; stop it close for twelve months, then rack it off; but without the dregs; filter them through a bag of flannel of three or four folds; add the clear to the quantity, and pour one or two quarts of brandy, according to the size of the vessel; stop it up, and at the end of three years you may either bottle it or drink it fresh from the cask.

Raisin wine would be extremely good if made rich with fruit and kept long, which improves the flavour greatly.

Very fine Black Currant Wine.

To every three quarts of juice, put the same of water unboiled; and to every three quarts of the liquor add three pounds of very pure moist sugar; put it into a cask, preserving a little for filling up; put the cask in a warm dry room, and the liquor will ferment of itself. Skim off the refuse when the fermentation shall be over, and fill up with the reserved liquor. When it has ceased working, pour three quarts of brandy to forty quarts of wine. Bung it close for nine months, then bottle it and drain the thick part through a jelly-bag until it be clear, and bottle that. Keep it ten or twelve months.

Champagne.

To every pound or quart of grapes picked and bruised put one quart of water, let it stand in a tub three days, stirring it every day. To every gallon of juice when pressed out by the hands through a cloth, (and after standing a little time, carefully pour off the sediment), put three pounds of good loaf sugar. Barrel it, and put the bung slightly over; when it has done working, or at the end of three weeks, add isinglass in the proportion of half an ounce to ten gallons of liquor, dissolving it previously in a small quantity of the liquor, stir it for three days once a day, and at the last stirring add one quart of white brandy to every five gallons of wine. In a few days bung it down close, and in six months

bottle it. The fruit to be picked when full grown, and just beginning to change colour. Bottle it in March.

Gooseberry Wine.

Take four pounds of gooseberries at the time for bottling; pick and bruise them in a mortar; put over them one gallon of water, and let it stand three days, stirring it three or four times a day, then strain it through a hair sieve, and to every gallon of liquor put three pounds of loaf sugar, or good fine moist; put it into a cask, placing the bung lightly on until the fermentation ceases, then stop it down. It will be fit to bottle in six months.

You may if you please add to every four gallons of liquor one quart of brandy.

Gooseberry Wine.

To a gallon of water (cold after being boiled) add one gallon of full grown gooseberries well bruised, to be stirred often for forty-eight hours, then strain off, and add three pounds and a half of loaf sugar; put it into a cask; when the fermentation ceases, add a wine-glass of brandy; bung it tight, and keep it six months before bottling.

Orange Wine.

Four hundred and fifty Seville oranges; peel of three hundred and fifty; boil fifty-six gallons of water, allowing three pounds of lump sugar to each gallon of water. When it boils pour it on the peels of the oranges; beat up the whites and shells of twelve eggs to a froth; put it to the liquor; when it boils, skim it till clear, then pour it on your peels and cover it; let it stand three or four days, then put it in the tub. After it has stood a fortnight, you may add two quarts of brandy, and stop it down.

If you should not find liquor enough off the peels to fill the tub, put hot water on them sufficient to do so; do not put the orange juice till you put it in the tub. A little of the liquor that is boiled to be put *cold* to the *juice for fear* of its turning off the few days it stands.

A Good Blackberry Wine.

To make an excellent wine, almost equal to port, take ripe blackberries, press the juice from them, let it stand thirty-six hours to ferment (lightly covered) and skim off whatever rises to the top; then, to every gallon of the juice, add one quart of water and three pounds of sugar (brown will do); let it stand in an open vessel for twenty-four hours; skim and strain it, then barrel it. Let it stand eight or nine months, when it should be racked off, and bottled and corked close. Age improves it.

Mead.

To a gallon of water put four pounds of honey; boil it three-quarters of an hour; skim it. Add one ounce of hops; boil it half an hour, and let it stand till next day; put the quantity made into your cask; to thirteen gallons of the liquor add a quart of brandy. Lightly stop it till the fermentation is over, then stop it very close. Keep it a year in cask.

Cowslip Mead.

Put thirty pounds of honey into fifteen gallons of water, and boil till one gallon is wasted; skim it, and have ready a dozen and a half of lemons cut in quarters; pour a gallon of the liquor boiling hot over them; put the remainder into a tub with eight pecks of cowslip-pips; let them stay all night; then put the liquor and the lemons to eight spoonfuls of new yeast, and a handful of sweet-brier; stir altogether; let it work three or four days; strain it; put it into the cask. Let it stand six months. Then bottle it.

FOREIGN WINES

AND THE

MANAGEMENT OF THE CELLAR.

*Constituent Parts of the Wines ordinarily drank in England.**

Wines.	Water.	Alcohol.	Sugar.		Tartaric Acid.
One Imperial Pint contains	oz.	oz.	oz.	grs.	grs.
Port	16	4	1	2	80
Brown Sherry	$15\frac{1}{2}$	$4\frac{1}{2}$	0	360	90
Pale Sherry.	16	4	0	80	170
Claret.	18	2	0	0	161
Burgundy	$17\frac{1}{2}$	$2\frac{1}{2}$	0	0	160
Hock	$17\frac{3}{4}$	$2\frac{1}{4}$	0	0	127
Moselle	$18\frac{1}{4}$	$1\frac{3}{4}$	0	0	140
Champagne.	17	3	1	133	90
Madeira	16	4	0	400	100

Wines are prepared by the dried fermentation of the sugar which exists in the juices of fruits. The wines of Europe are mostly made from the juice of the grape, which before fermentation is called "must." Wines vary according to the quantities of sugar, alcohol, and acid they contain. When wines contain much sugar they are called "sweet," when little "dry." The quantity of alcohol depends on the amount of sugar changed during fermentation. It is frequently added to wines to give them strength, as in port, sherry, and Madeira. Clarets, hocks, and the light wines of the Continent will not bear the addition of alcohol. The acid in wines made from grapes is tartaric. It forms an insoluble salt with potash, which is the tartar of the lees of wine, and thus wine is freed from too much acidity. The colour of red wines depends on a very small quantity of colouring matter contained in the grape. The market value of wines depends to a great extent on the development of a variety of chemical compounds, which are formed during their fermentation and keeping. These form the "bouquet" and peculiar flavour of wines. Some of these compounds, as œnanthic ether, occur in all wines. Others, as

* South Kensington Museum Food Gallery.

acetic, butyric, caprylic ethers, and oxide of amyl, are only found in old wines; whilst some are peculiar to the wines of particular districts, as the flavouring principle of the muscatel grape.*

The vine is one of the most useful of vegetable productions. In Switzerland the leaves are used as a remedy for cuts and wounds. Our cooks use them for covering the breast of the grouse when roasting. They also make a good tea, which is said to strengthen the nerves. The prunings yield vinegar. The leaves are also good food for cows and sheep; but are too rare in England to be thus used, and in the vine countries they are used for manuring the vineyard itself. Vine branches yield potash and salt when burned. The Germans distil brandy from the skins or "musk," and extract an oil from the seeds.

For making wine the grapes are gathered when *fully* ripe. For the best wine the best grapes are selected; the stems are pressed with them, as they are thought to make the wine keep better. For red wine the grapes are picked off the clusters by the hand. Formerly, and still in one or two of the Greek islands, at St. Lucar, and in some parts of France the grapes are *trodden* as in the days of Isaiah; but now in a general way mechanical presses, or two wooden cylinders turning in opposite directions, press out the juice of the grape.

The juice is then put into vats and left to ferment. The saccharine principle of the grape and the tartaric acid cause the fermentation, which is rendered active by heat, and delayed by cold. In the dry wines there is a good proportion of tartaric acid; in the sweet wines the quantity is inferior to the grape-sugar; this difference causes the wine to be either "dry," as it is called, or "sweet."

When the wine is sufficiently fermented, it is drawn off into barrels. But as the process of wine making, interesting as it is, is of no service to the British householder, we will not enter into useless details, but proceed to enumerate the names and properties of the wines with which he should fill his cellars. And first we must premise that first-rate wine can never be obtained cheaply; and all assertions of such being the case are delusions and snares. The purchaser should buy of thoroughly respectable wine merchants, not of publicans or grocers; and the better the character of the firm is, the surer he may be of obtaining a pure and wholesome wine.

Port

stands at the head of the above table, and has long been held in general esteem by Englishmen, but it is well known that there is no wine more easily imitated or adulterated; *cheap* port is therefore to be eschewed. According to Mr. Cyrus Redding (to whose admirable and amusing volume "On Wines" we recommend the reader), port or Oporto has long been so grievously brandied, coloured with elderberries, &c., in Portugal itself, that it never is (or only by accident) a pure wine. The taste for it was first introduced into England by a sense of economy. Portugal undertook to import our woollens if her port wine was taken at a lower duty than the wines of France. The treaty respecting it, called the Methuen Treaty,

* From South Kensington Food Catalogue.

was signed in 1703. At first the wine was supplied tolerably pure, but as it became an established favourite in England it was gradually more and more brandied and adulterated, and thus the English taste gradually acquired a relish for *hot* fruity wine, which it has not yet lost.

Mr. Henderson, a great authority on the subject of wines, says of port or Oporto, "The wines of Oporto, which abound in the astringent principle, and derive additional potency from the brandy added to them previously to exportation (especially those intended for the British market) may be serviceable in disorders of the alimentary canal, where gentle tonics are required. But the gallic acid renders them unfit for weak stomachs, and what astringent virtues they show will be found in greater proportion in the wines of Alicant and Rota, which contain more tannin and less acid. The excitement they produce is of a more sluggish nature than that attending the use of the purer French wines, and does not enliven the fancy in the same degree. As a frequent beverage they are unquestionably more pernicious."

For persons unable to purchase port wine at a good price from a first-rate wine merchant, Roussillon is an excellent substitute, and according to Mr. Redding has been frequently sold for port. It contains only 18·13 of alcohol, port 23·39, consequently it is not so heating or intoxicating, and it is considerably cheaper than good port. It is a wine of the Pyrénées Orientales.

"The red wines of Roussillon are remarkable for their fine deep colour and alcohol. They have the advantage also of not spoiling when left in a partially filled cask. They ameliorate by age. They deposit continually, and form a crust on the bottle."—*Redding on Wines.*

Masdeu

is an excellent Roussillon wine; it is strong in body, deep in colour, and of rich soft taste.

Sherry

is either brown or pale.

AMONTILLADO, a dry delicate sherry, is from Andalusia. It is excellent and is supposed to be the "sack" of Shakspeare.

All sherry is by nature of a pale colour, the darker shades are conferred by age, or by *vino de color*, or by boiled wine. This is made by taking some of the must before fermentation begins and boiling it down to a sixth of the quantity, keeping it constantly stirred and skimmed from all impurities. When the liquor is quite thick the fire underneath it is withdrawn gradually and it is let get cool. This boiled wine is mixed in the proportion of a quarter or less quantity with the pale sherry, and thus makes it of different kinds of brown shades, consequently brown sherry is sweeter than the dry wines.

The pale sherry is the pure wine, to which is added two bottles of brandy to the butt.

Manzanilla

is a delicate pure wine of a fine straw colour. The name is the Spanish for chamomile, and the flavour of the wine probably suggested the name,

as there is a chamomile taste in Manzanilla. "This wine," says Mr. Redding, "is the driest of all the Spanish wines, scarcely any wine whatever surpassing its delicacy and purity. It admits of no mixture of any kind, not even the smallest quantity of brandy, without deterioration in taste and flavour. When carefully made it becomes a perfect wine, and improves with age beyond all other kinds both in flavour and firmness, so as to surpass almost every dry wine." Sherries are not to be judged by colour but by taste. They are subject to adulteration and cannot be bought pure and good under a good price. *Pure* sherry being totally without acidity is considered the most wholesome of wines. A good age is required to mellow the Spanish wines.

For those who are unable to afford *good* sherry, Marsala is an excellent substitute, and is generally very pure. It resembles Madeira of the second class. "A voyage to India and home renders this wine, when of the best quality, a most excellent dinner wine, equal to Madeira."*

Now as the advantages to Madeira of an Eastern voyage are motion and heat, why could not both be contrived for the Marsala without the voyage, by giving it motion by some mechanical means, in a place where the temperature is kept high? Marsala is the strongest of wines; it has 25·09 per cent. of alcohol.

Madeira.

Though this wine is no longer as fashionable as it once was, it is still considered a very choice and excellent wine. It requires age, and is better for an East Indian voyage. Its flavour and aroma perfect themselves by years, and it stands all climates.

Madeira should never be bought cheaply, as it cannot be sold at a low price if genuine, and there are many imitations of it from the rejected wines of the south of the island. "Of all the strong wines," says Mr. Henderson, "those of Madeira, when of good quality, seem best adapted to invalids; being equally spirituous as sherry, but possessing a more delicate flavour and aroma, and though often slightly acidulous, agreeing better with dyspeptic habits." Madeira is next to port in amount of alcohol.

MALMSEY MADEIRA is a first-class wine of great excellence. It has not so much alcohol as Madeira, only about 16·40 per cent.

Claret,

becoming now a universal beverage, is a French wine of the Bordelais. The name claret comes (Mr. Redding tells us) from *Clairet;* the wine is "a mixture of several sorts of wine, Beni-Castro and Bordeaux are thus mingled up for the English market. Sometimes Languedoc and Bordeaux, at others Hermitage and Alicant with Bordeaux, and uniformly a portion of spirits of wine in addition."

Claret was one of the favourite wines of our ancestors, and is exceedingly excellent when good, but the sour *vin ordinaire* sold for it at low rates is about as nasty as it can be. But those weak clarets *mull* well in

* Cyrus Redding "On Wines," p. 281.

winter, and are good enough for ordinary claret-cup in summer when in both cases sugar is added. But the householder who lays down a good cellar should give the best price for claret.

Château Livran is a good wine; St. Julien of St. Estèphe is nourishing, with great body; Château Belaire ranks next to Château Margaux. Of ordinary clarets St. Emilion is a good cheap wine. Château Lafitte is a wine quite unsurpassed in excellence. Château Latour has greater body and consistence than Château Lafitte; it requires to be kept a year longer in wood than Lafitte to attain maturity.

Château Margaux has a rich colour and a soft bouquet, and strength without headiness.

The best Médoc wines are Château Margaux, Château Lafitte, Château Latour. These wines are of fine colour and perfume, less warm than Burgundy, with a taste of the violet, and a rich purple hue.

The Bordeaux white wines are Château d'Yquem, Haut Sauterne, Sauterne, and Vin de Graves. These wines vary in excellence and in price. The first-named are excellent light wines.

Burgundy.

The red wines of Bungundy are distinguished by great spirituosity and a powerful aroma. Owing perhaps to this aroma they are more heating than many stronger wines. They are pleasant, healthful, and invigorating. The best Burgundies are Romanée-Conti, Chambertin, red and white, St. Georges, Clos Vougeot; and for cheaper wines Beaune, Beaujolais, and Macon. The finest white Burgundy is Montrachet. Chablis is an excellent light wine.

Chambertin is white and red. "It is a wine of great fulness, keeps well, and has the aroma perfect. It was the favourite wine of Napoleon." —*Redding on Wines.*

The Romanée-Conti is considered the most perfect wine in Burgundy. St. Georges is an exquisite wine. Montrachet is a delicious white wine, considered the best white wine in Burgundy; it has an exquisite perfume. Burgundy is always sent to England in bottles, and is said to deteriorate even on the short voyage across the Channel. Chablis is a pleasant dry wine. There are very good second-class Burgundies, of lower price than the fine wines above named. These are Vosne, Nuits, Volnay, Beaune, and Pommard, &c.

The wines of the Rhône must find their place in a well-furnished cellar. Of these

HERMITAGE is full of body, spirit, and perfume. The white is the finest of white wines. Red Hermitage is of good body and has a raspberry flavour. The second growth of red Hermitage (less expensive) is also a very good wine.

FRONTIGNAC is a fine spirituous luscious wine—a muscadine wine. Frontignac is white, sweet, and of moderate price.

We come now to the light and most excellent wines of the Rhine.

Hocks.

From the town of Hochheim on the Marne the name Hock is derived; and is too generally applied to all German wines by us. The Hoch-

heimer made near this town is very excellent, but the best wine is the Schloss-Johannesberger, made on Prince Metternich's estate. The "Steinberger" is sometimes said to rival the Johannesberger however.

Marcobrunner is another excellent Rhine wine. Rudesheimer and Niersteiner are delicate and free from acidity.

There are numerous Hocks of an inferior quality sold in England, varying in price from 18*s.* to 54*s.*, or even higher.

Moselle.

The Moselle wines are light and secondary to those of the Rhine and Marne. Moselle wines have lately become favourites with us. They will not keep as long as Rhine wine, but are very pleasant and wholesome. These light wines "are more refrigerant," says Mr. Henderson, "than any others, and are excellent for persons in low fevers, and when there is great nervous exhaustion."

The German wines are imported in bottles, generally in cases containing three dozen each.

Champagne.

"Champagne," says Mr. Redding, in his interesting book, "reached its present perfection and estimation in 1610, at the coronation of Louis XIII. The oldest anecdote which the French possess relative to the excellence of Rheims wine dates as far back as 1397, when Vinceslaus, King of Bohemia and of the Romans, on coming to France to negotiate a treaty with Charles VI., arrived at Rheims, and having tasted the wine of Champagne—it is to be presumed for the first time—spun out his diplomatic errand to the longest possible moment, and then gave up all that was required of him in order to prolong his stay, getting drunk on Champagne daily before dinner. It is said that Francis I. of France, Pope Leo X., Charles V. of Spain, and Henry VIII. of England had each of them a vineyard at Ay, their own property, and on each vineyard a small house occupied by a superintendent. Thus the genuine article was secured by each sovereign for his own table."

The vineyards on the banks of the Marne produce the best Champagne.

Champagne is divided into sparkling or *mousseux*, demi-sparkling (*crêmans* or *demi-mousseux*), and still Champagne or *non-mousseux*. They are white, straw-coloured, grey, rosy, or red.

Still Champagne is infinitely the best, though not generally preferred in England.

SILLERY has no sparkle at all. The wine which froths only slightly is the best.

Ice improves Champagne by diminishing its effervescence. The Champagne which effervesces violently is not the best wine. The best Champagnes are: Sillery (still and dry), Ay (fine effervescing wine, bright in colour), Hautvilliers, Dizy, Epernay "Closet." These are white Champagnes. The Hautvilliers, Dizy, Marenil, and Epernay Closet, which are red Champagnes, are third-class wines.

The use of Champagne for invalids cannot be extolled sufficiently.

The writer has seen cases where its administration has been apparently life-giving. It acts so quickly on the circulation, raises the depressed spirits so gently, and exhilarates without causing any after-reaction, that it cannot be praised enough as a curative agent.

New Champagne glasses, which by means of a hollow stem keep up the effervescence, have been invented for some years, but we prefer the old-fashioned glasses. Rhine wines and Moselle should be drunk out of the thinnest glass it is possible to procure. The glasses sold for Hock are green.

The wines of Champagne, whether still or effervescing, are generally in perfection the third year of bottling; but the best wines gain, rather than lose in delicacy by keeping, up to ten or twenty years.

Though good Champagne is so excellent its imitations or any species of bad Champagne are very deleterious.

English gooseberry wine is a pleasant effervescent wine, but altogether lacks the aromal bouquet of Champagne.

Amongst rarer wines in the English cellar should be Tokay, a Hungarian wine, thick, rich, and expensive; Constantia, from Cape of Good Hope, a luscious wine; Lachrymæ Christi, a Neapolitan wine, a rich sweet luscious red wine.

Mountain or old Malaga is little drunk now. It is a rich sweet wine.

The Hungarian wines have recently come into the English market with some success. There is a Hungarian Chablis sold very cheap, but we have no personal knowledge of it, and the red wines are said to be pleasant and good.

The Greek wines also have taken their place in England, and are said to be very good.

Of these the wines of Cyprus were once well-known in England. Cyprus of the Commandery is still valued. The age of Cyprus wine may be known by pouring it into a glass and observing whether oily particles adhere to the sides. It is often adulterated with sweet wines and perfumes. Cold injures it; it should be placed before the fire in winter before drinking. Kephisia, when red, resembles claret rather, and is a good wine.

While Kephisia is a pleasant dry wine, Patras, when red, approaches the character of Burgundy.

Mont Hymet is also a pleasant wine.

The purchaser should taste these wines and judge for himself, however, as in these matters personal taste can alone decide.

The Spanish Catalan, red and white, is considered a good wine when it can be had pure, and is used in some of the hospitals. It is a spirituous red wine, warm and fruity. It is very cheap, and Kinloch's is, we believe, considered the best. These wines are infinitely preferable to the old cheap Cape wine, of which one now hears very little.

The Cape wines, except Constantia, are of a very inferior quality and now seldom purchased. Lisbon and Bucellas, once favourite wines, are now out of fashion.

Australia has sent us "Adelaide" wine; but as yet it is not in much vogue.

The tables of the higher classes have long been served with the light wines of France and the Rhine, port being seldom taken (except with cheese) or with the dessert, or on account of its *known* age and purity.

THE WINE CELLAR.

The wine cellar should if possible face north, and be divided in two portions, as some wines, such as Madeira, Sherry, Malaga, and Cyprus, keep better at a higher temperature than the light wines require. "The wines of Champagne, Bordeaux, and the Rhône should be kept in cellars where no motion can affect them, far from the vibration or rather trembling of the earth from the traffic over granite pavements; they should be as far removed from sewers and the air of courts where trades of a bad odour are carried on, as possible."

Bad smells affect wine. Vinegar must never be kept in a wine cellar, and the temperature should be maintained the same all the year round, by a thermometer; for wine is influenced by heat and cold, by frequent moving and shaking. The temperature of the cellar should be between 46° and 56° Fahrenheit.

Greek and Hungarian wines require a temperature of 66° Fahrenheit.*

Sparkling wines should be kept in the very coolest part of the cellar, cork downwards. All other kinds should be laid down horizontally, that the cork may be kept moist and the air thus excluded; but the rich wines of liqueur, as Malaga, Syracuse, &c., may be placed on their ends.

Wines differ considerably as to the time of keeping. They lose their bouquet by being kept too long. There is always a middle period when they are best used.

Burgundy will be good for twenty years, but it does not improve after fourteen. Good Champagne improves for fifteen years, and will keep forty years, but is best at twelve years old.

Roussillon will keep for any length of time. The luscious wines improve by keeping, as do port and sherry. Effervescing wines require to be bottled early. Delicate and light wines should remain unbottled as long as possible, for in that state they improve most. Strong-bodied wines, on the contrary, should remain long in bottle. When any wine ceases to deposit it begins to deteriorate.

Great care should be taken in bottling delicate wines.

Mr. Redding tells us that on the Continent a plan is adopted which enables the wine to be drawn off slowly (even as required for drinking) without injuring the wine by the inevitable admission of air. A bottle of the purest olive oil is poured on the wine. It floats of course at the top, and excludes the air from the partly emptied cask, so that the quality of the wine will be preserved for a year's duration.

Wine in casks should be firmly laid up, and bottled only in fine weather.

* Artificial heat may be introduced into a cellar by means of a chafing-dish.

The bottles should be cleansed and rinsed twenty-four hours before they are filled.

Shot should never be used to cleanse wine bottles, as if any of them get jammed in, the acid of the wine will act on them. *Clean gravel* is much the best. After washing, the bottles should be well drained, being placed with their necks downwards. Afterwards they should be rinsed with a little brandy, *if the wine is not of the first class.* Very fine wine would be spoiled by the brandy.

The corks should be selected with care; they must be sound, *not* specked with black, well cut, and *quite new*, or they will give a bad taste to the wine. The corks are improved by steeping them in hot water. A wooden mallet, a bottling boot, and a squeezer will be required. The corking boot is buckled by a strap to the knee, the bottle placed in it, and the cork after being squeezed in the press is driven into the bottle. But we are going a little too fast. The wine has to be bottled first.

Place the bottle and filterer in a tub by the cask, bore a hole in the lower part of the cask with a gimlet, and receive the wine in the bottle. Two persons should bottle the wine. The bottle, when as full as required, should be passed to the person who corks, who does it as above described. As the wine draws near the bottom of the cask a thick piece of muslin is placed in the strainer to receive the sediment. Bottles should have the corks covered with a composition of resin, Burgundy pitch, and yellow wax, with a little red mastic. This is melted over the fire till it froths, then stirred and replaced till it has well combined; with this mixture the corks should be wholly covered.

The wine when bottled must be stored away in its respective bins, and covered with a layer of sawdust. The rows of bottles are separated by a lath, and the necks laid alternately in opposite directions, the necks of the second row being placed towards the bottoms of the first. Wine so laid in will be ready for use according to its age. Old port wine will be ready to drink after it has been bottled about six months.

Good sherry will be fit to drink as soon as the "sickness," as it is called, ceases.

For fining wine the following receipt is a good one. Draw a gallon and a half of the wine, whisk into one quart of it the whites of five eggs, with a whisk. When it is thoroughly mixed, pour it into the cask by the bunghole and stir it up with a long thin stick; then pour in the rest of the gallon; stir again and skim off the bubbles which follow. Close the bunghole and let it stand for three or four days, or isinglass may be used; one ounce is sufficient to clear 100 gallons of wine.

Decanting.

Port wine should be decanted *very* carefully into a warm decanter, keeping the chalked side of the bottle uppermost, so as not to disturb the crust or sediment. Sherry should be decanted two hours before it is used; as should all the Greek white wines.

Greek and Hungarian red wines should only be decanted just before using. The same may be said of the French red wines.

The deposit which exists in all wine (though in some it is scarcely

perceptible) consists in port, of tartar and tannin, which, uniting with the albuminous matter in it, forms a crust, which becomes year by year so thin that it has obtained the name of beeswing.

The deposit from white wine is chiefly tartar, in the form of crystals.

Wines are made in this country from oranges, raisins, gooseberries, currants, elderberries, and other fruits. They contain other acids besides tartaric, which are not thrown down as insoluble salts; hence the necessity of adding to them large quantities of sugar, to cover the taste of the acid. The sugar in this case is in a readily fermentible condition, hence these wines cannot be taken in large quantities with the same impunity as wines holding less sugar in solution.

It is better, if possible, to buy foreign wines in the wood, and bottle them at home, but this is not always practicable.

Half-pint bottles are not economical and not requisite, and even a bottle of Champagne may be kept partly full after opening, by corking tightly with a silver-stoppered cork and turning the neck downwards.

DISTILLED SPIRITS.

The analysis of an imperial pint of Brandy, Rum, and Gin is shown in this table :—

	Water.	Alcohol.	Sugar.	
	oz.	oz.	oz.	gr.
Brandy	$9\frac{1}{2}$	$10\frac{1}{2}$	0	80
Rum	5	15	0	0
Gin (best)	12	8	0	0
Gin (retail)	16	4	$\frac{1}{2}$	0

Distillation was invented by the Arabs, and was introduced into Europe by them A.D. 900. But it was not in general use, the chemist and alchemist alone practising it, till the seventeenth century, when the art was fully established in France.

The "still" became then very common in England, and in all great country houses the lady had her still-room and her "still-room maid" (who, by the by, retains the same name, though the still-room in the old sense exists no longer), and here the housemother of Queen Anne's days, and long after, distilled rose and lavender water; and "cordial waters," with which she dosed her family.

When wines or other fermented liquors are submitted to heat, the alcohol distils over and may be collected in a receiver. The product is called *distilled spirits.* The alcohol is not, however, pure, but mixed with water. It is difficult to procure alcohol pure. A spirit having a density of ·825, is called *proof spirit* in this country; and when distilled spirits contain more or less alcohol than this they are said to be *under* or *above* proof.

BRANDY is distilled from wine, cider, perry, corn, potatoes, prunes, and cherries.

The brandy which first passes condensed from the still is weak and is always thrown back again; then follows the purest product; the best brandy. As the distillation proceeds the brandy becomes weaker. The

Eau de vie première, the best, is the only brandy exported from France. Brandy of inferior quality is distilled from garden fruits, honey, molasses, corn, potatoes, &c.

The peculiar flavour of brandy depends on the addition of peach kernels to the liquid while distilling. It also contains œnanthic and acetic ethers.

SPANISH BRANDY ranks next in quality to French brandy. FRENCH BRANDY is called Cognac from the chief place of its manufactory.

GIN is obtained from fermented grain, to which the berries of the juniper are added to give it a flavour. Other flavouring substances are employed, as cinnamon, cloves, &c., for what is called "cordial gin." The words gin and Geneva are a corruption of *Genièvre*, French for juniper.

Gin is not allowed to be sold pure by the distiller, because for the convenience of the excise it must be distilled only in a certain mode and strength above proof. The distiller is compelled to send his product to a person called a rectifier, who reduces and adulterates it at his pleasure.

The worst possible adulterations are practised on English gin, and it is consequently the worst spirit to drink. Unhappily it is chiefly the poor who suffer from this wrong. The corn spirit of the Scotch and Irish is suffered to be purely distilled. WHISKY is therefore less injurious than gin. It has a slightly smoky flavour.

RUM is distilled, from fermented sugar and molasses, in the West Indies. Its peculiar odour depends on butyric ether, and a flavour is sometimes given to it by the addition of pineapples.

Rum is a wholesome spirit; chiefly drunk in the navy by the seamen. It is very nourishing, and is often given with milk to invalids; a table-spoonful to a tumbler of milk. Rum should be kept a long time.

HOLLANDS is a gin from Schiedam.

ARRACK is obtained from fermented rice, betel-nuts, or the sap of the various species of palm.

POTATO BRANDY is made by converting the starch of the potato into glucose, and then fermenting and distilling it.

LIQUEURS are spirits distilled from various substances which give their peculiar flavour, and to which a considerable quantity of sugar is added.

MARASCHINO DE ZARA is a liquor distilled from the cherry.

GOLDWASSER or EAU DE VIE DE DANTSIC is distilled from corn and has gold leaf floating on it.

ROSOLIO is made from brandy, sugar, cinnamon, and cloves distilled.

SHRUB is a liquor made from rum—now seldom seen.

BEER AND BREWING.

The most common form of using alcohol in this country is that of BEER.

An Imperial pint of the Beers named contains the following ingredients :—

BEERS.	Water.	Alcohol.	Sugar.		Acetic Acid.
	ozs.	ozs.	ozs.	grs.	grs.
London Stout	$18\frac{1}{2}$	$1\frac{1}{2}$	0	281	54
London Porter	$19\frac{1}{4}$	$\frac{3}{4}$	0	267	45
Pale Ale	$17\frac{1}{2}$	$2\frac{1}{2}$	0	240	40
Mild Ale	$18\frac{3}{4}$	$1\frac{1}{4}$	0	280	38
Strong Ale	18	2	2	136	54

Ale

has been for centuries the national beverage of the English. The "mead" of the Saxons appears to have early merged into it, as it is mentioned by Chaucer ; and in his time, and afterwards, its praises were sung in popular songs and Christmas choruses. But the "good ale" of Bishop Still's famous song was not the ale of to-day. It was made of malt it is true, and resembled our ale in being an alcoholic liquor ; but to the malt, *unmalted* oats were added, and the bitter flavour was given by the addition of ivy-berries, or bay-berries. An attempt was made in 1428 to flavour ale with hops, but the people, always averse to novelty, petitioned Parliament against it as a "wicked weed," and the use of them was deferred till 1528, when, as the old rhyme tells us—

> "——, Reformation, and beer,*
> Came into England in the same year."

It appears likely that hops were not indigenous to Britain, but were introduced from the Hanse Towns, where they were used for the beer which formed one of the staple exports of those boroughs in the thirteenth century.

* Ale made with hops.

THE BREWERY.

The brewery, when possible, should be a separate apartment, as nothing is worse for the beer than to allow the place in which it is made to be used for washing, &c.

Any place well-covered in and ventilated will do for a brewhouse, but the bottom should be paved with brick or stone, that it may always be well cleansed. Bad smells in the neighbourhood will spoil the beer, for the proper making of which pure air and soft water are most essential.

Proper Management of Vessels for Brewing.

The utensils for brewing should never be used for any other purpose except perhaps for home-made wines, and when so used should be most carefully cleansed. They should be kept in a very clean place.

The casks should be cleaned before using with boiling water, the heads taken out, and the inside scrubbed with sand and fuller's earth. When this is done the head is to be put on again, and the cask scalded well; then a piece of unslacked lime should be thrown into it, and the bung stopped close. When the casks have stood thus for some time, they must be rinsed well with cold water, they will then be fit for use.

The greatest attention must be paid to the coolers, for if they are not quite pure and sweet they will communicate a most unpleasant taste to the home-brewed. Our readers may have occasionally detected in it a flavour like snuff; this proceeds from coolers which have contracted a mustiness or smell, which no washing will remove, when wet has long lodged in the wood of the cooler. When the coolers are being prepared, the water used for cleaning should never be suffered to stand too long in them, or it will soak in and produce this taint—for this reason it is better to have coolers lined with lead; they are very clean, and expedite the cooling of the liquor, thus saving a good deal of waste of the liquor by evaporation.

If the coolers are of wood, it is best to scrub them well over with cold water; hot water, old housekeepers say, is more likely to develop the evil taint.

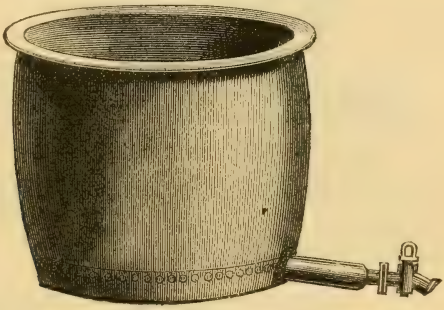
The mash tub also must be kept perfectly clean; nor must the grains be left in the tub longer than the day after brewing, lest they should sour it. A sour scent in the brewhouse will be likely to infect the liquor and worts.

The brewhouse floor should be washed down, so as to insure cleanliness.

BREWING UTENSILS.

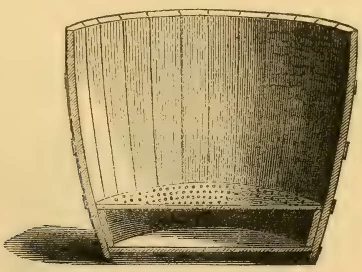
Every brewhouse, large or small, must have its plant or proper utensils ; these are—

1. The copper for the liquor or wort, or *when possible* two coppers are better, one for the water and one for the wort.



Brewing Copper.

2. The mash tub, which is a tub with a false bottom some inches above the true bottom. It is bored full of small holes through which the



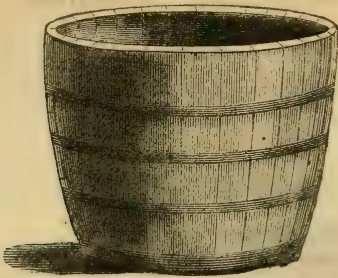
Mash Tub.

wort is drained from the malt. These holes must be examined occasionally to see that they do not get choked up. If they are, a skewer should be made hot and they should be repierced with it.

For home use a wine butt cut down, with a false bottom put in it, answers every purpose.

3. The oar or rudder, anciently called the *Penstaff*, for stirring up the malt in the mash tub.

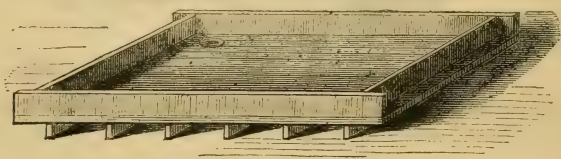
4. The *underback*—that is, a tub to receive the wort as it comes out of



Underback.

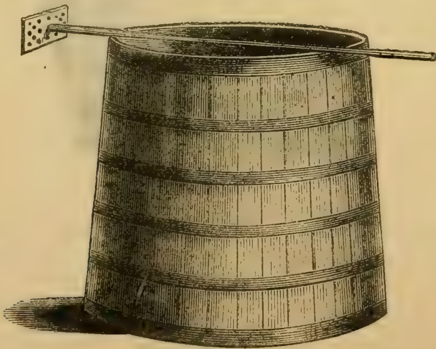
the mash tub. The upper part of the cut-down wine butt would answer for it.

5. The *Coolers.*—These are oblong shallow vessels. They should be raised at one end to allow the wort to run off free of the sediment.



Cooler.

6. The Fermenting tun; it should be large enough to hold the whole brewing; but the mash tub, with the false bottom taken out, can be used.

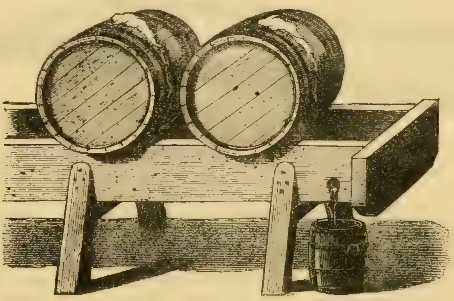


Fermenting Tun and Rouser.

And we may observe here, that the grains taken out are of great use for feeding cows and pigs.

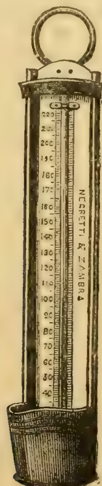
7. Casks and oak-stands to place them on. As to size and number, they will depend on the quantity required.

8. Stillions—*i.e.*, flat wooden troughs in which the vats or barrels stand while the yeast is coming over.



Stillion.

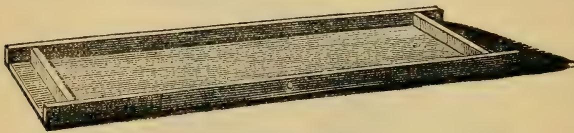
9. A thermometer in a tin case made for brewers.



Thermometer.

10. The Saccharometer—unnecessary in private brewhouses.

11. A few tap tubs, with iron hoops.
12. Six tin spouts for the beer to work through when in the casks.
13. A whisk for the yeast.
14. A bushel measure to measure the malt.
15. A tub and skimmer for the yeast.



Tap Trough.

Materials used in Brewing.

The materials required for brewing pure beer are *Malt*, *Hops*, *Yeast*, and *water* and isinglass for fining—(this is dissolved in sour beer).

MALT is made from barley, wheat, oats, or rye; but barley is the best, and is used for English beer.

Malting, or making malt, is performed by putting the barley in a cistern, steeping it in water till the grains become swollen and soft, and then piling it in a heap, to develop heat by the absorption of oxygen from the air. After this the grain is spread about on the floor, more or less, according to the temperature of the air. It soon begins to sprout, and throws out a rootlet and germ, when the peculiar chemical substance called *diastase* is developed, which has the singular power of converting starch first into *dextrin*, and afterwards into *grape-sugar*. In fourteen days the barley will have sprouted sufficiently; its starch being to a great extent converted into sugar. It is then dried in a kiln, and is in a fit state to use for brewing.

There are four sorts of malt; made by varying the amount of heat employed in drying it. These kinds are called pale, amber, brown, and blown.

The *pale malt* contains the largest amount of saccharine matter, and consequently makes the best and strongest beer.

Amber malt is only slightly scorched, and has therefore nearly as much sugar in it as the pale; in *brown malt* the scorching has greatly diminished the amount of sugar; in the *black* or *blown*, the sugar has been by heat converted into caramel, which has a bitter taste.

In choosing malt it is best to buy that which has the grains full, round and plump, with a thin skin, and with a mellow sweet taste. In testing it draw a broken grain across a board; if it leaves a rich chalk mark it is good—or put some in water; good malt always swims; if there is raw barley mixed with it, it will sink. Maltsters sometimes adulterate their malt with raw barley, but it will never float as good malt does. Malt should weigh from 40 to 45 lbs. per bushel. If it is light it is not so good, or pure.

It is best to grind the malt at home, as it measures more when ground

than it does in the grain. It should not be ground *too* fine, and it should be crushed or ground nearly a week (or if high dried or dark malt, ten days or a fortnight) before using—that it may mellow.

The pale malt is the most wholesome. Beer made of brown malt turns sour sooner than the pale does.

Hops.

The hop or *Humulus Lupulus*, is a plant now extensively cultivated in England. Our hop gardens form a portion of the national wealth, and far excel in picturesque beauty the vineyards of France and Spain. Hops are cultivated chiefly in Kent, Sussex, Worcestershire, and Herefordshire; also in Belgium and the United States. They require a rich and loamy soil, and great quantities of manure. They need the greatest care, and are always an uncertain crop. In unfavourable seasons they are imported.

The hops from South and Mid-Kent are the strongest and most highly flavoured. Herefordshire and Worcestershire hops, of a more delicate flavour, are used chiefly for pale ale. Belgium hops are used for porter. "Spent hops"—*i.e.*, those which have been boiled in the wort, are used for manure.

Hops are gathered by hand in September and the first week of October, and are rapidly kiln-dried. After which they are put into pockets, or bags, where they become a solid greenish-yellow mass. The active principle of the hop resides in a bitter resinous matter called *lupulin*, and also in an essential oil, both of which prevent beer from decomposing.

Hops retain their strength up to three or four years old, after which they are worthless; but the fresher they are the better.

In selecting hops we must think of the kind of ale for which they are to be used. If for pale ale or table beer new hops of a pale yellow colour and mild flavour should be chosen. They should have a clammy feel when rubbed, and plenty of yellow farina on them. If they are required for brewing strong ales, porter, or stout, the strongest hops of Kent or Sussex are best, and always as *new* as it is possible to obtain.

Hops remain very good, however, for two years, then they begin to decay and lose their flavour, unless great quantities are kept together, in which case they preserve it much longer.

They should be kept in a dry place.

Hops which have grown stale, and lost their natural bitterness, can be renovated by unbagging them, and sprinkling them with aloes and water.

Water.

The quality of the water used in brewing is of the greatest importance.

Experience has proved that the best water for brewing is *soft* and *pure* river water, or that of a stream running over a chalky or gravelly bottom. Rivers exposed to the beneficial influences of sunshine and air, and not polluted by drainage, make the best ale; the reason perhaps why some

particular localities, such as Stoke-upon-Trent, Burton, &c., have become famous for it.

Hard water astringes the power of the malt, and consequently requires a much larger quantity to be used than soft water does.

Chalky water also produces good ale, for which Dorchester used last century to be famed.

If, however, nothing but hard water can be obtained, it may be in a degree softened by exposure to the air and sun, and putting some pieces of chalk to infuse into it; or, when the water is set to boil, a quantity of bran should be put into the copper with it, which will take off part of its hardness, and make it better extract the virtues of the malt.

Brown malt will bear a coarse river water, it is said, like that of the Thames about London, but it will not keep more than six months good.

YEAST should be good, fresh, and white; bad yeast will spoil good beer.

The brewer should be careful to have every article required for brewing ready before he begins, as, if the wort waits for anything that should be immediately at hand, it will be injured.

The Process of Brewing.

We give our readers now the process of brewing, as carried on in the writer's family very many years ago—when, in fact, George III. was king—and which produced a home-brewed ale rarely equalled then, and certainly not surpassed now :—

"First, the utensils," says the old receipt, "must be properly cleansed and scalded the day before. The malt should be ground a week—if brown malt, a fortnight—previously. The water in the copper must then be made boiling. The season for brewing should be March if you desire the ale or beer to keep well. For the air at that time is temperate, and contributes to the good working or fermentation of the liquor, which principally promotes its preservation and good keeping.

"Very cold as well as very hot weather prevents the free fermentation of liquors, for if you brew in very cold weather, unless you use some artificial means to warm the cellar while the liquor is working, it will never clear itself properly, and extreme heat will prove equally detrimental. The beer will be muddy and sour, and often past recovery.

"A damp cellar also affects beer; the liquor will chill in it and become vapid or flat.

"Beer is therefore better brewed in March, for it will then have time to settle before the winter. October is also a good brewing season, if the cellars are known to be dry and temperate with regard to cold or heat.

"All cellars for keeping liquors should be so contrived that no external air can get freely to them; the variation of the temperature of the air will affect the liquors and render them unfit for working.

"A constant temperate air softens malt liquors.

"And now we come to the process of mashing the malt, to extract from it its saccharine matter. The *exact* heat of the water is of the first importance. If too near the boiling point it will *set* the flour of the malt

and turn it into paste, instead of extracting the goodness; if too cool the wort will be without strength, a certain amount of heat being required to extract the sugar."

And now comes in the modern use of the thermometer. Our old housewife informs us that the boiling water must be poured into the mash-tub, and the steam "suffered to go off, till the person brewing can see his or her shadow in the water." We have a more sure test; and in the following table we will show by the thermometer the right temperature of the water. At the same time we may observe, that three parts of boiling water to one part of cold is about right, and the old fashion of looking at the shadow will then be justified.

Table of Temperature of Water used in Mashing. To be Tested by Thermometer.

First mash . . . 170° Second mash . . . 180°
Third mash (boiling water).

Quantities required for making Different Beers.

For 2 Hogsheads of Strong Ale:

24 bushels of malt. 24 lbs. of good hops.
4 quarts of barm, or yeast.
Water to quantity of 2 hogsheads, by filling up as described.

To brew 54 Gallons of Strong Ale:

10 bushels of malt. 10 lbs. of hops.
Water to make up 54 gallons.

Bitter Ale.

One Hogshead:

4 bushels of pale malt. 8 lbs. of hops.
Water to make up hogshead.

Table Beer,

When not made from second mash, but brewed at once.

54 Gallons:
4 bushels of malt. 3 or 4 lbs. of Farnham hops.

Harvest Small Beer, to keep a week.

54 Gallons:
3 bushels of malt. 4 lbs. of hops.

12 Gallons of good Beer:
1 bushel of malt. 1 lb. of hops.

3 Gallons of Ale:

1 quart of malt. 8 lbs. of hops.
5 barrels (of 36 gallons each) of water.

The last Receipt from South Kensington Food Catalogue.

Preparation for Brewing.

Cleanse the casks; if quite new scald and soak them for several days with a hot brine of salt and water; then put in them some spent hops and water with a little yeast and leave it to slightly ferment: old casks must be carefully cleaned as previously directed.

Fill the copper with soft water over night, and light and damp down the copper fire so that it may be in readiness next morning. Place your utensils.

Lean the mash tub a little on one side; mix the boiling with cold water till it is of the proper temperature by thermometer (*see* last page). Then let another person gently put in the malt, while you *constantly* stir it. It requires stirring *from the first.*

When the mash gets thick and is difficult to stir, add more water, stirring it continually.

Leave out a portion of dry malt to cover the mash, and when it is wholly wet and soaked, cover this dry malt over it, to prevent evaporation. Then cover the mash tub closely with sacks, and leave it to steep. In the course of mashing, great care must be taken that the mash is thoroughly stirred with the oar from the bottom. Particular attention must be paid to the time of steeping the mashes. Strong beer must be allowed three, or at least, two hours; ale, one hour; and if small beer is drawn afterwards, half an hour.

Before the mash is let run, a pail must be prepared to catch the first flush, as it is generally thickish; another pail must be ready to receive the drain while the first thick running is returned to the malt. This is repeated till the wort runs quite clear.

The first mash seldom runs off more than half the quantity of liquor. It is necessary therefore to pour the same quantity of water over it again, and this is done with a watering-pot, so that the water may not drain too fast through the malt. It is called "sparging." The water poured in should be of 180° to 185°, according to the weather. As soon as the wort for the strong beer has been all drawn off, it must be put, with half the hops (previously soaked in water taken from the first mash), into the wort copper to boil. While mashing the first malt, fill up the copper with water and make it boil ready for the second mash. When the second mash begins, water at 180° is poured over the malt; it stands again for a quarter of an hour and is drawn off like the first, returning the wort to the tub till it runs clear.

But meantime we must return to the strong ale in the second copper. *Quick* boiling is essential, though not *too* quick.

In order to ascertain the proper time the liquor should boil, try it occasionally in a glass; when it breaks into flakes and the hops sink to the bottom, it is ready.

It must not be over-boiled, or it will not fine in the casks.

Essence of malt is extracted by length of boiling, by which the wort can be made of the thickness of honey or treacle. If the wort remains too long in the underback after drawing off, it is apt to become "foxy" or sour. The average time for boiling the first wort is about an hour and a half; for the wort from the second mash two hours or two hours and a half, and for the third, or small beer mash, three hours at least. The hops of the first wort, when strained, are returned into the copper again, with some fresh ones added for the second mash beer.

When the wort is intended to be boiled for more than an hour, it is best not to add the hops until an hour of the time when it is to be cooled, as the aroma is to a certain extent lost in the boiling.

The hops which are not squeezed retain about two quarts of wort to every pound, which, with the loss in evaporation, must be allowed for in the quantity brewed.

The wort when sufficiently boiled is strained into the coolers, and should not be more than three or four inches deep in them, except in winter, rapid cooling being very essential, as otherwise the wort may turn sour.

While drawing off the first wort, keep the copper well stirred, that the hops may not burn on to the bottom.

The third mash is managed much as the second, but as less saccharine matter will remain in the beer, it is usual to add to the wort one or two pounds of sugar to eighteen gallons, according to the need of the beer.

When the brewing is confined to one quality of beer only, the process is the same, except that the *whole quantity* is run through the malt, more water being added gradually, and constantly stirred and mixed together before hopping and boiling. This beer is called "Entire."

The malt left after brewing is called brewers' grains.

Fermentation.

The principal points to be taken into consideration in the fermentation of beer, is the weather, the yeast, and the proper performance of mashing.

If the weather is thundery, it is likely to promote acetic fermentation. Warm weather accelerates fermentation, cold weather delays it.

The yeast, *if bad*, will obstruct the proper fermentation.

If the mashes have been made with too cool liquors, fermentation is difficult, and the wort impoverished; while if the liquor used for mashing was too hot, it will take some time to cure it by fermentation, or it will be "ropy."

The state of the fermentation will soon show any of these faults. If the liquor was too hot, the air bladders on the head of the wort will be as large as a pennypiece. If it was too cool there will be few bladders, and they will be small.

The proper temperature of the wort, when the yeast is put to it, depends on the season of the year. In summer the wort cannot be too cool, in winter it may be as hot as 65°, 70°, or 75° Fahrenheit.

The temperature of the place in which the ale is to ferment must be also considered, and directed by the thermometer.

Small brewings require more heat than larger ones; and if the outer temperature be very high, the inner must be kept below it. Cold draughts also must be avoided, as they draw off the carbonic acid gas. More yeast is required for fermentation in cold weather than in warm; at least a *quarter less* will be required in summer.

The method of mixing the yeast is this: Say the wort is by thermometer 60°; take a pound of yeast to two quarts of wort, stir them well together and place them near the fire for a few minutes, till they begin to ferment; then pour the whole into the fermenting cask, and stir it up with the oar.

The first sign of fermentation is a thin white line round the side of the tun, which gradually creams over the surface. By and by a singing sound is heard from the gas bubbles as they rise to the surface; by degrees the creamy head, growing thicker and thicker, takes the appearance of a cauliflower. At first it is white, then yellow, then brownish-yellow. If the head is in broad flat flakes, something is wrong, or if the air bubbles are of a bluish-white.

When no cauliflower head appears, the wort is said to be unsound, and "to boil." The cauliflower head, when there, grows higher, denser, and closer; the bubbles melt into each other and grow larger, till the head, from which they gradually break and sink, becomes a close brownish mass, and is skimmed off as soon as it shows a tendency to sink. If it fell in, the beer would be bitter.

Fermentation should be gradual, not too quick.

If it does not begin in four or five hours, add a little more yeast, stirring well together.

After skimming, take a handful of flour and a handful of salt, warm them by the fire and sprinkle them over the top of the fermenting wort; give the whole a good stirring and immediately fill the barrels, which must be dry and warm.

The stillions or tubs under the barrels will receive the yeast as it runs over from them.*

Fill up the barrels every three hours for a day or two. In four or five days the ale will have cleared itself of the yeast.

It must then stand till the vinous fermentation is finished. This may be known by the yeast at the bunghole turning brown and full of holes. When this appearance is detected, the barrels should be tightly bunged. In three weeks table-beer, and in two or three months the ale will be fit for use, according to its strength.

---

* The old-fashioned system was to skim off the top barm, then fill the casks quite full, and immediately bung and peg them close. Then a hole was bored with a tap-borer near the summit of the stave, at the same distance from the top as the lower taphole is from the bottom, for working through that upper hole, which is a clean and more effectual method than working it over the cask; for being thus closely confined it soon sets itself into a convulsive motion of working, and forces itself fine, provided the casks are filled up five or six times a day.

Proper Management of the Beer Cellar.

In order to keep strong beer in a proper state of preservation, remember that when once the vessel is broached regard must be paid to the time in which it may be finished. If it is likely to be drunk up quickly, it will last good to the end, but if the draught is slow, it is best not to draw off quite half before bottling the rest, otherwise it will grow flat, dead, and sour.

In proportion to the quantity of liquor in a cask, it will be a shorter or longer time ripening. A vessel which contains two hogsheads of beer will require twice the time of one that contains only one hogshead to perfect itself, and it is found by experience that it is wise for those who are able, to brew a hogshead at once, instead of a less quantity, as the whole hogshead, if it be fit to draw in a year, will have body enough to keep it good for two, three, or four years, provided it has a sufficient strength of malt and hops.

In order to fine beer, some people who brew with high-dried barley malt put a bag containing about three pints of wheat into every hogshead of liquor, which will fine it and make the beer drink soft and mellow. Or three pints of wheat malt in a bag, put into a hogshead, will have the same effect.

" But all malt liquors, however well they may be brewed, may be spoiled by bad cellaring, which will sometimes make them ferment in the cask, and occasionally turn them thick and sour. When this occurs, the best way to restore the liquor is to open the bunghole of the cask for two or three days, and if that does not stop the fermentation, to put in two or three pounds of oystershells—first washed, dried well in an oven, and then beaten to a fine powder. After putting them in the liquor must be stirred a little, and it will soon settle fine, and lose its sharp taste.

" If this, however, does not prove effectual, draw the liquor off into another vessel, and suspend in it a small bag of wheat or wheat-malt in proportion to the size of the barrel."

" It will sometimes happen that such fermentation takes place from a change of weather. If the cellar is not bad, nothing need be done then; in a few months it will fine of itself and grow mellow."

In some old-fashioned country-houses it is the practice to dip whisks into yeast, then beat it well, and hang up the whisks with the yeast on them to dry. The beating and stirring one of these whisks in new wort will soon raise a fermentation. It is really better to work the wort *well* in the tun before putting it into the barrels. Some beat the yeast down very often while it is in the tun, and keep it there working two or three days, observing to put it into the barrel *just* when the yeast begins to fall. This liquor is in general very fine; while, on the contrary, that which is put into the barrel soon after it is brewed will be several months before it comes to a state of perfection.

With respect to the management of small beer, the first consideration should be to make it tolerably good in quality, which will always be found truly economical, as it will keep better and nourish the servants more. It is a known fact that beer *saves butcher's meat;* a consideration in these

days of high prices for it. Servants who do not drink beer require more animal food.

It is advisable, where there is good cellarage, to brew a stock of table beer in March or October, or both months if possible, in hogsheads. The beer brewed in March should not be tapped till October, and that brewed in October should be tapped in March.

It may be as well to observe that, if the cellars are so situated as to be exposed to great heat, the October brewing will be best; for then the liquor will have time to digest before the warm weather comes.

If the cellars are damp and chilly, March is the best month to brew in. Some experienced householders use the pale malt in March and the brown in October, supposing that the pale malt, being then made with a less degree of heat than the brown, will ripen better in summer; and that the brown, which has been made with greater heat, can better stand the winter. But this is a mere matter of opinion.

The temperature of the cellar should be tested by a thermometer hung up in it. The height should be about 55° Fahrenheit.

Fining with Isinglass.

When beer is required to become fine, before it has worked itself so, or if it does not do so in proper time, isinglass is used to assist it; and this is better than the wheat bag, if it can be afforded.

The mixture made with it is called "finings."

The proportion is one ounce of isinglass to a barrel, on an average.

Dissolve it in sour beer till it is as thick as treacle; strain it through a piece of canvas; then put a little more beer till it is about as thick as cream.

Draw out a pail of beer and add the finings, whisk the whole to a head, then pour it through a funnel into the bunghole. Make room for it by previously drawing out another pailful of beer. Then *well stir* the ale; pour back the last drawn pailful, and replace the bung when the bubbles are gone down.

Try it in a week or ten days. If then it is not clear, add "half a pound of salt to a hogshead," or "two ounces to the hogshead of alum or quicklime."

"Ropiness" requires to cure it more yeast and a second fermentation; adding the wheat bag.

Racking Beer.

Racking is drawing off beer from the large casks into small ones, for use. Whenever this is done be sure to empty the large cask into several smaller ones, or it will get flat, from the air filling the empty upper part. Add a few hops to each cask. Rack in a small stream, and do not leave a large space between the cask and tun as you draw it off.

When a small cask is opened for use, and gets flat, add a little new beer to it; or make a paste of wheat flour and treacle, and drop it into the cask to recover it.

Stout.

Quantities for one Hogshead:

1 quarter of pale malt. 2 bushels of brown malt.
Three-quarters of a bushel of blown malt. 8 lbs. of hops.
Made as all other beer.

Porter.

Porter may be made from the second mash of stout by adding 18 lbs. of treacle to it—thus 36 gallons of porter may be obtained. The best hop for porter is the *Humulus Germanicus.*

Porter Brewed as "Entire."

Half a quarter of pale malt. 1 bushel of brown malt.
Half a bushel of blown malt. 4 lbs. of hops.

Brew stout and porter by the general rules for brewing. Porter owes much of its flavour to a high and rapid fermentation.

Bottling Beer.

The first thing to be done is to see that the bottles are very clean, and very dry. Wet bottles will turn the beer mouldy, or "mothery," as it is called.

Next the corks must be new and sound; for if the air can get through them the ale will be flat and never rise. There is no saving, but great waste in using old corks.

If a cork has once been in a bottle, even though it has not been drawn by a corkscrew, it will turn musty as soon as exposed to the air, and will communicate its evil flavour to the bottle it is next put into.

Choosing Corks.

Take those which are soft and *clear from specks.*

Observe in bottling that the top and middle of the hogshead are the strongest and will sooner rise in the bottles than the bottom.

When you begin bottling go on. If you leave your task uncompleted and continue it at intervals each bottle will have a different taste.

If the cask of beer you have in use grows flat, bottle the beer; but nto every bottle put two or three lumps of sugar, about the size of a walnut, but it is best to bottle beer before it has quite completed its fermentation.

If you brew table beer in March or October, some of it may be bottled at the end of six months, putting in every bottle a lump of sugar; but if you want *good* bottled beer, bottle it as soon as it has done working.

Beer should never, however, be bottled while there is any tendency to spirt from the vent peg; but as soon as this has ceased, bottle at once.

For the flat beer of an open cask you had better put into the bottle either the sugar (as before directed) or a few raisins or grains of rice.

If you find it impossible to keep your bottled beer in your cellars from some defect in the latter, you might try the following expedient.

Sink holes in the garden, purchase and put in the holes some large oil jars, and fill the earth close to their sides. One jar will hold a dozen bottles of beer, and will keep them well; but you must take care to *closely* cover the tops of the jars.

In the winter, when the weather is frosty, shut up all the lights or windows of your cellar (if it has any), and close them with manure to keep the proper temperature (55°) up.

To Preserve Yeast for Brewing.

When you have plenty of yeast, take a quantity of it, stir and work it well with a whisk until it becomes liquid and thin. Then get a clean deal board, and with a soft brush lay a thin layer of yeast on it. Turn it downwards over a tub or pan to keep it from dust and let it dry.

When that coat is dry lay on another, and let it also dry; adding layer after layer, as they dry, till you have as much as you wish. This dried yeast will keep for several months.

When you want to use it, cut off a piece and lay it in warm water, then stir it well and it will be fit for use.

If it is for brewing, take a handful of birch tied together, dip it in the yeast, and let it hang up to dry. You can make as many whisks as you please, but they must be kept carefully from dust.

When the beer is set to work, throw in one of these, and it will act as well in promoting fermentation as fresh yeast.

"In brewing, one barrel, or thirty-six gallons, is lost by evaporation; half a barrel, or eighteen gallons, by fermentation and racking; and half a barrel is absorbed by the grains."—*South Kensington Museum Food Catalogue.*

Many things besides malt are used for inferior beers, such as potatoes, beans, turnips, and other starchy foods. In Russia a beer is made from rye called *Quass.*

The Tartars and Turks make a beer from mare's milk, called *Koumis.*

In South America a beer called *Chica* is made from maize.

In Africa beer is made from an infusion and fermentation of millet-seeds.

Beer is adulterated with salt, capsicums, &c., but not very generally. Publicans are said to put in salt to make their customers thirsty. Grains of paradise are also added sometimes.

The householder will do wisely to avoid buying beer at public-houses, but have it in barrels in the house, from the *best* breweries—Ind and Coope's, Allsopp's, Bass's, &c.—if he does not brew at home.

Ind and Coope sell nine-gallon casks, which are more convenient for small families; they allow a good discount for ready money.

The brewer's men are obliged, if required, to test the quantity in each cask delivered, to show that it is full; and on any complaints from the

servants, or unaccountable ending of a cask of beer, it is well to exact this proof from them.

Beer should be kept in a dry place, but not too hot.

The adulteration of beer with caramel (burnt sugar) may be detected by adding a little tannic acid, which, if the beer is pure, will bleach it directly. On the burnt sugar-coloured beer it has no effect.

CIDER.

Cider is a spirit distilled from the expressed juice of apples.

The best apples for cider are not those used at dessert, or for cooking, but rough apples which have a light colour with a maze of red streaks on the sunny side.

The apples used for cider must be thoroughly ripe, or the cider will be harsh, rough, and unpleasant. The branches of the orchard trees are shaken, and the perfectly ripe fruit falls ; the rest is gathered when ready ; the last ripe is used for inferior cider.

The fruit should be separated; as the yellow apple mixed with red, or all yellow, is the one to use for the best cider ; the green apples make an inferior kind. Each sort must be collected separately, and kept till mellow. This is done by piling the apples in heaps about a foot high, and exposing them to the sun and air. As the fruit matures, it gets of a deeper yellow. Every heap is examined before grinding, and the decayed or green fruit is removed.

The fruit, when ready, is placed in a circular stone trough with a bruising-stone, or in an apple-mill. In the trough the apples are crushed by the stone, put in motion by a horse, and this way is thought in Devonshire the best, as the acids of the apple or pear, acting on the metal of the iron cider mill, produce a disagreeable taste, and a brown colour. The trough stands in a shed, roofed, but open at the sides so that a draught of air may pass over it.

The mess produced by the grinding is called pommage. This pommage is removed, as it is ready, to the press, so that part is pressed while the rest is grinding, though some persons think it ought to remain twenty-four hours in the trough before it is taken to the press. Hair cloths are spread, and the pommage in large cakes is laid in the press with perfect evenness. Upon the whole a strong board is placed, wider than the pile on which the blocks rest.

The hair cloths must be perfectly clean and fresh, or they will communicate a bad taste to the cider.

The cakes are then squeezed by lowering the screw of the press, and increasing the pressure as the cakes become drier, till the must or juice is *quite* squeezed out. This is completed by the long lever and windlass. The juice is received in a tub.

It is then strained through a coarse hair sieve into the fermenting vats or casks—generally into the casks. The juice of the apple before fermentation consists of sugar, mucilage, acid, water, essential oil, and astringent matter.

Of these constituents only sugar produces ardent spirits.

The ciderists of Herefordshire attribute much of the strength of cider to the rind and kernels, and are particular in grinding them with the pulp.

Fermentation of apple juice should not be conducted with too much heat, or the fermentation would be too rapid ; neither must the temperature be too low. The degree of heat should be between 40° and 50° Fahrenheit.

Cider ferments with a violent ebullition ; the bubbles rise and form a scum or crust over the surface of the liquor ; the ascent of additional fixed air breaks this crust ; another is formed and again broken, and thus it proceeds till the ebullition gradually ceases, and the fermentation is less brisk. If then a hissing sound is heard in the liquor the room is too warm, and the external air must be admitted.

All fermentation must be stopped as soon as the liquor is clear. To do this it must be racked off into open vessels, and kept cool for a day or two.

Then it must be barrelled and stored in a cool place for winter. In Herefordshire the casks are placed in open sheds for the winter, and early in spring racked again, and put into the cellar.

The cider must be racked in a small stream and the receiving tub must be close to the tap, to avoid another fermentation.

Cider casks should be thoroughly clean and dry when filled, and they should not be filled within a gallon or two. The casks should be filled up every two or three weeks, to supply the waste by insensible fermentation, until the beginning of the next March.

If the cider should be dull it may be improved by putting lump sugar into it—two pounds to one hogshead.

If the colour be bad a little essentia vina will give it any tint it may require.

Cider should be bottled in April, when the barometer is high and the wind northerly. It must be strongly corked and waxed over, and secured with small string or wire.

It is said that half a hogshead of cider may be expected from one well-covered apple tree.

DAILY DUTIES OF THE HOUSE-MOTHER.

FEEDING THE FAMILY.

HAVING attained some knowledge of the constituent parts, prices, and season for different kinds of food, the house-mother will have less difficulty in arranging the daily bill of fare.

She should visit the kitchen to give the cook her orders, directly after breakfast—or before that meal, if it be habitually a late one. The reason for making the hour early is, that much hindrance is put in the way of the cook if it is late, and also that tradesmen generally call early for orders.

The first thing to be done is to inspect the larder *thoroughly*. It will contain, doubtless, cold meat, suet, dripping, butter, cheese, eggs, etc., and the breadpan. This last should be uncovered and examined, for servants are apt to be neglectful and wasteful with regard to bread. No unnecessary pieces should be found in it. Only the crusts from having grated bread for puddings, cutlets, etc. are allowable. If these exist they should be soaked, beaten up with an egg, a little milk, and a few currants, and baked as a pudding—a very good one it is. Bread should never be used up to the last loaf, so that the household are obliged to eat new bread, which is not as wholesome as one-day old bread, and is also extravagant. The difference between eating new bread and stale being *one loaf* in five *more* of the new. If by accident the bread has accumulated, and the house-mother finds a stale roll or stale loaf too many and too hard, the freshness of both may be restored by dipping them in hot water, and putting them in the oven, when they will be as fresh as ever. Home-made bread is best and cheapest, the weight of water used in making it being saved.

Moreover, home-made bread keeps fresh longer than baker's bread, and may be eaten pleasantly the third or even fourth day. There is also a greater chance of escaping adulteration of alum, etc. etc. The house-mother can guess tolerably well what quantity of bread will be required, so that it may not run out suddenly, and should order it accordingly. The average quantity is *about* a quartern loaf for each person, but in some families (if ladies only) less will be required, and a small or half loaf of 2lbs. will be found sufficient.

The FLOUR-BIN next requires examination. In it is kept the flour used for puddings and cooking generally. It should be kept dry—about a quartern of flour a week is sufficient, unless the family is large. Flour should be bought of the miller. *Firsts* are required for puddings and tarts ; *Seconds* (or even whole meal) are much better and more wholesome for bread. The baker should be asked occasionally whether bread has fallen ; and the price should be ascertained by the housekeeper.

Next comes the DRIPPING. This should be nicely clarified, and kept

in clean white basins ready for use. It is of great value in housekeeping. The mode of clarifying it is this: Put it as it comes from the meat into a basin, pour boiling water over it, and stir it round; set it to cool. When it is hard and cold, lift the cake which will have formed off the sediment, and put it in the basin, or basins, for use. Cover from dust. Dripping is used for basting, frying, making plain meat pie-crusts, and plain family cake. The poor buy it at 7*d.* or 8*d.* a pound for eating on bread instead of butter. It is in grand households the cook's perquisite. Then, of course, the cooking has to be done with butter or lard. The value of allowing the dripping in a large household is estimated at from 10*l.* to 15*l.*, in addition to the wages. We have heard of a cook refusing to give up the privilege for an extra 10*l.* a year.

Eggs—the bowl of eggs should be examined, and the number used accounted for by the cook.

If Poultry is kept, the eggs are generally put into the store-room, dated, and given out as required, a certain number being kept for winter. When bought at the egg merchants a few only should be purchased at a time, in case of their proving bad. To try the freshness of eggs see pp. 244. As eggs may be wastefully used, it is well for the house-mother to recollect or keep a memorandum of what puddings, cutlets, etc. she has had during the week. These minutiæ of housekeeping are really important, and should be jotted down for the sake of remembrance. We have found it a good way to enter the dinner ordered daily in a memo-randum-book. This both checks expenditure and saves the dreary monotony of a frequent repetition of the same dishes.

Ham should be kept under a wire cover. When very low and dry it can be grated off into a jar and kept for ham toast—an excellent break-fast dish. The bone suffices to flavour pea soup.

Bones of all kinds should be inquired for, as they will otherwise disappear and be wasted. Every bone (not left on a plate) should be stewed down in the stockpot for gravy, or stock for soup. With a slight covering of meat they may be devilled. Next comes the cold meat. Cold beef may be re-warmed as *Breslau de Bœuf* (see Model Cookery), as *Cannelon de Bœuf*, or curried, minced, and served with poached eggs, scalloped with bread crumbs, etc. etc., or served in cold slices, steeped in a mixture of vinegar and mustard, and garnished with slices of hard egg or beetroot. It may also be made into croquettes, olives, or cakes.

Cold mutton may be re-warmed as hash or curry.

Cold lamb is best eaten as it remains with lettuce.

Cold veal is best minced; it also curries well; *scalloped* it is excellent, or it makes good blanquettes.

Cold pork can be curried.

Cold salt beef makes excellent bubble and squeak, or curry, or cold slices, as above.

Cold rabbit can be fricasseed or curried.

Cold fowls may be fricasseed, minced, curried, or put into a mayonaise.

Cold hare is better jugged—which is our English way of braising—than it is the first day. It may also be hashed.

Cold turkey—the white meat may be minced, and legs broiled and laid in it; or it makes a capital fricassee.

We name these different modes of making *rechauffés* to help in the ordering of dinner and suggest the variety which may spring from one joint.

Cheese must be kept covered. When it is down too near the rind to send to table, it can be grated for cheese pudding, or used in Macaroni.

In ordinary dinners (if the household be large) the luncheon or nursery dinner has to be taken into consideration, and the kitchen dinner also; and in reality the task is an easier and pleasanter one for the mistress of such an establishment than for the house-mother who has to stint and economise. For the roast beef of luncheon or kitchen dinner will supply curry, Breslau de Bœuf, olives, etc., for the late dinner, while variety can be given with poultry, etc. at a moderate expense. Numbers in fact do not increase expense to the extent that might be anticipated; and a grand household is kept (proportionately of course) at a less expense than a small one.

But now we turn to the house-mother who rules over a smaller realm, and has to "cut and contrive." In ordering dinner she requires to exercise forethought and observation. For example, if she plans her dinners a little beforehand they will fit into each other better. Say she has a sirloin of beef one day, the fillet or undercut in tiny slices fried with bits of butter and a slice of lemon laid on each, and served on mashed potato, makes a nice little dish for dinner. The end stewed; the main piece roasted. Here are three hot dinners; cold or minced a fourth; the dripping will make the crust of a meat pie; the bone will go largely towards stock, or will suffice for a vegetable soup. Therefore, seeing these various ways of doing it, she orders a *good sized* joint, and not a small one which would dry up and be less profitable. Or say that she is obliged to have the whites of a certain number of eggs used; she should take care to order some dish in which the remaining yolks may be used.

If a ham bone has been grated, pea soup will suggest itself for the next day, and so on. Observation—thought—foresight are all called into play in the due execution of these duties.

We must here observe that economy is sometimes well shown in foregoing puddings, or at least in selecting the most inexpensive. That they are a pleasant and even wholesome variety of diet no one will deny; but they materially add to expense, and are not so beneficial as a fruit dessert. Fresh fruit in hot weather is really requisite for health; and in winter the good effects of oranges cannot be denied. We consider that if the house-mother cannot afford both a second course and a dessert, it is wiser to give up the former, go without puddings and eat fruit; or perhaps on the days cold meat forms the dinner, pudding may appear and no dessert; and on roast meat days fruit and no pudding.

If in ordering dinner there is much to remember, the cook should be made to enter every order on her slate; and also the articles required for making it.

When dinner has been thus ordered or arranged, the lady should go into the kitchen, observe if it is perfectly clean, glance into the closets, notice if the kitchen table is kept white and the tins and covers bright, and commend or reprove as required. She should then walk into the back kitchen or scullery, *to see that the sink is clean and quite free from bad smells*—a very important thing. If anything unpleasant is perceptible, chloride of lime should instantly be poured down it. The mistress of the

house must also not be above asking to look inside the saucepans, which should be kept very clean, and never left dirty "to be cleaned another time." She should also insist on the knives never being put in the basket dirty, but under all circumstances *washed*, and ready for cleaning. Then she should note down in her memorandum-book what hearthstone, blacking, emery paper, soda, or soap may be required, and the cook should accompany her to the store-room to receive her supplies.

It is a good plan to do all this every day if possible; but where time is an object, and duties are various and pressing, *once a week* suffices for the examination of the cooking utensils, etc., but then the day of examination should not be always the same, but vary, so that no preparation may be made for it by a careless or dirty servant.

Once a week is also often enough to give out sugar and tea for the servants, sugar for cooking, etc. etc., soap, candles, soda, and house flannels; though with regard to cleaning utensils the cook may occasionally have to apply oftener. If any articles are left from the last week's giving out she should be asked to produce them, and the quantity should be made up. For example, say that you have given out on one Saturday 1 lb. of rice, 2 lbs. of flour, 1 lb. of sugar (for cooking), ½ lb. of cocoa, 2 lbs. of candles. The next week there will probably be some of each left. It will then only be necessary to make up the quantities to the allowances before given out. This will keep the cook with always sufficient articles for use and yet with little power to waste.

The following quantities for each person in a large household are thought sufficient for one week:

BREAD.—8 lbs. or two quartern loaves for a woman servant; 16 lbs. or four quarterns for a man; but this quantity will vary as more or less meat is eaten.

MEAT.—3½ lbs. for a woman; 5¼ lbs. for a man, averaging all eaters.

MILK.—1 quart, or more if it is for a child.

BUTTER.—½ lb.

CHEESE.—½ lb.

POTATOES.—3½ lbs.

BEER.—1 gallon for a woman; 7 quarts for a man.

TEA.—Two ounces.

COFFEE.—¼ lb. (for breakfast only).

COCOA (PASTE).—Ditto, ¼ lb.

SUGAR.—½ lb.

N.B.—In giving out stores for the week the housekeeper must multiply each article by the number of persons, and that will give the quantity required. Articles of doubtful use, such as rice or tapioca, may be given or not; an account should be required of the last given out before replenishing the kitchen jar. The kitchen spice-box should be filled, and the date of filling it entered in the store-room book.

After having thus far guided the house-mother, we must say a few words on marketing. It is certainly best to go to market (if distance permits) in person.

The senses will help in selecting the best materials for feeding the family, and there are occasionally times when, from a great abundance, or from an impossibility of keeping them, articles generally expensive may be had at a moderate price. After settling, therefore, what to have, it is well

to go and buy it at the shop or market itself—a *near* market is a great economy by the bye—there is a chance of real bargains at it—and at all times it is cheaper than the shops (if we except Covent Garden). Ready money, of course, gets a fair advantage at it. Vegetables are the most uncertain articles as to price (speaking from a London experience), very often the same vegetable in every respect is selling at one shop at a comparatively high price, and at another close by, for nearly half the sum. For these, and for fruit, it is especially worth catering oneself.

Butcher's meat is pretty generally cheaper at market. A *good* butcher is generally a dear one *apparently*, but such is not the case if his meat be really better than the cheap one's. Prices of meat vary too often to give them.

Bread has a fixed price and rises or falls with the market-price of flour.

Milk is generally 4*d.* a quart. Butter 1*s.* 8*d.* to 2*s.*, at present. The Aylesbury is the best. Devonshire has a peculiar flavour liked by some people. Buy at a trustworthy dairy.

If, however, circumstances forbid an early walk marketing, then I can give no better advice than that of Dr. Kitchener to "employ trustworthy tradesmen," who will send for orders and obey them to the best of their ability. In this case each daily order should be written down in a private memorandum-book, and when the weekly bills or books come in, they should be compared with this list. Fix the sum you can allow for house-keeping, and never exceed it.

We will conclude this part of our subject by giving Dr. Kitchener's rules for marketing, which are for persons of *good* income.

"The best rule is to pay ready money for everything, and to deal with the most respectable tradesmen in your neighbourhood.

"If you leave it to their integrity to supply you with a good article, at the fair market price, you will be supplied with better provisions, and at as reasonable a rate as those *bargain-hunters*, who 'travel around, around about' a market till they are trapped to buy some *unchewable* old poultry, *tough* mutton, stringy cow-beef, or *stale* fish, at a very little less than the price of prime and proper food.

"With *savings* like these they toddle home in triumph, cackling all the way like a goose that has got ankle-deep into good luck.

"All the skill of the most accomplished cook will avail nothing unless she is furnished with prime provisions. The best way to procure these is to deal with shops of established character. You may appear to pay perhaps ten per cent. more than you would were you to deal with those who pretend to sell cheap, but you would be much better served. Every trade has its tricks and deceptions; those who follow them can deceive you if they please, and they are too apt to do so if you provoke the exercise of their overreaching talent. Challenge them to a game at 'Catch who can,' by entirely relying on your own judgment, and you will soon find nothing but very long experience can make you equal to the combat of marketing to the utmost advantage. If you think a tradesman has imposed upon you, never use a second word if the first will not do, nor drop the least hint of an imposition; the only method to induce him to make an abatement is the hope of future favours, pay the demand, and deal with the gentleman no more; but do not let him see that you are displeased, or as soon as you are out of sight your reputation will suffer

as much as your pocket has. Before you go to market, look over your larder and consider well what things you require—especially on a Saturday. No well-regulated family can suffer a disorderly caterer to be jumping in and out to make purchases on a Sunday morning. You will be enabled to manage much better if you will make out a bill of fare for the week on the Saturday before; for example, for a family of half a dozen:—

Sunday.—Roast beef and pudding.
Monday.—Fowl, what was left of pudding, fried, or warmed in a Dutch oven.
Tuesday.—Calf's head, apple pie.
Wednesday.—Leg of mutton.
Thursday.—Ditto, broiled or hashed, and pancakes.
Friday.—Fish, pudding.
Saturday.—Fish, or eggs and bacon.

"It is an excellent plan to have certain things on certain days. When your butcher or poulterer knows what you will want, he has a better chance of doing his best for you; and never think of ordering beef for roasting except for Sunday. When you order meat, poultry, or fish, tell the tradesman when you intend to dress it; he will then have it in his power to serve you with provision that will do him credit, which the finest meat in the world will never do, unless it has been kept a proper time to be ripe and tender."

Weights and Measures.—As all families are not provided with scales and weights, referring to the ingredients generally used in cakes and pastry, a comparative list of those weights and measures may be useful. Wheat-flour,—one pound is one quart; butter, when soft, one pound one ounce is one quart; loaf sugar, broken, one pound is one quart; white sugar, powdered, one pound one ounce is one quart; eggs, eight unbroken eggs are one pound; best brown sugar, one pound two ounces is one quart; sixteen large table-spoonfuls are half a pint; eight large table-spoonfuls are one gill; a common sized tumbler holds half-a-pint; a common sized wine-glass holds half-a-gill.

How to keep Receipts.

The usual way of keeping receipts on files dated with the year is a good one; but a friend has made (for the Editor) a very neat and ingenious case of brown holland, which hangs inside the store-room, or closet door, and holds the receipts *separately*. It is about a yard square of holland, on which pockets are stitched in rows—*i.e.* a long strip is stitched on the foundation by the bottom line and then divided into pockets. On each is marked the purpose for which it is designed—*i.e.* rent, taxes and rates, gas, water, butcher, grocer, baker, milk, etc. etc. The whole is neatly bound with ribbon or coloured tape, and is most convenient, as a receipt can be found in it in a moment.

The Breakfast Table.

A bright-looking breakfast-table is a cheerful welcome to a new day, and the housewife should be careful that it may offer nothing to the sight and taste but pleasing objects. In this volume will be seen a picture of a well-laid breakfast-table.

1. Brawn.
2. Mustard & Cress & Radishes.
3. Bread.
4. Hot Rolls.
5. Oysters & Bacon.
6. Kidneys.
7. Eggs.
8. Butter.

It will be seen that at the head of the table are the breakfast cups and saucers, the tea-cups to the left, the coffee-cups on the righthand side. The teapot and coffee-pot stand in front of the urn ; slop-basin and milk-jug to the left ; cream and hot milk to the right. Hot plates should come in with hot dishes ; a plate, knife and fork should be set for each person. Bread should be on a wooden platter. Hot rolls should be covered with a napkin. Dry toast and hot toast must only be sent in when the breakfast party are seated, as they are spoiled by keeping.

The tablecloth should be spotlessly white and smooth, the plate brightly cleaned, the china pretty, the food well cooked—tea, coffee, chocolate well made. An appetizing breakfast is a great promoter of health and good temper. A soiled cloth, tough toast, blackened and half-dressed chops, weak or cold tea, are real trials to temper when encountered at the beginning of the day. Flowers on the breakfast-table are imperative where they are not impossible.

"Set flowers on your table," says Leigh Hunt, "a whole nosegay if you can get it—or but two or three—or a single flower—a rose, a pink ; nay, a daisy. Bring a few daisies and buttercups from your last field-walk, and keep them alive in a little water ; ay, preserve but a branch of clover, or a handful of flowering grass, one of the most elegant as well as cheap of Nature's productions, and you have something on your table that reminds you of the beauties of God's creation, and gives you a link with the poets and sages that have done it most honour. Put but a rose, or a lily, or a violet on your table, and you and Lord Bacon have a custom in common ; for that great and wise man was in the habit of having the flowers in season set upon his table—morning, we believe, noon, and night ; that is to say, at all his meals ; for dinner, in his time, was taken at noon ; and why should he not have flowers at all his meals, seeing that they were growing all day ? Now here is a fashion that shall last you for ever, if you please, never changing with silks and velvets and silver forks, nor dependent upon the caprice of some fine gentleman or lady, who have nothing but caprice and change to give them importance and a sensation. The fashion of the garments of heaven and earth endures for ever, and you may adorn your table with specimens of their drapery, with flowers out of the fields, and golden beams out of the blue ether. Flowers on a morning table are specially suitable to the time. They look like the happy wakening of the Creation ; they bring the perfumes of the breath of Nature into your room ; they seem the representations and embodiments of the very smiles of your home, the graces of its good-morrow, proofs that some intellectual beauty is in ourselves, or those about us, some house Aurora (if we are so lucky as to have such a companion) helping to strew our life with sweets, or in ourselves some masculine mildness not unworthy to possess such a companion, or unlikely to gain her."

Breakfast dishes are of themselves pretty and taking to the eye. Eggs in their stands or in baskets lined with moss, as Plover eggs are served, are beautiful in form and colour ; honeycomb, radishes and mustard and cress, are all lovely patches of colour on a white ground.

Chops are not very well fitted for adornment, but brawn and ham are picturesque if adorned with plenty of parsley.

Then twice-dressed meat or fish may appear in scallop shells, which

placed on a white napkin look very pretty; and no dish looks better than lobster cutlets. We suggest also that the breakfast-room should face the east to receive the early sunshine.

On the sideboard should be placed cold joints of all kinds—they rather encumber a breakfast table, therefore custom and good taste require a cloth over the sideboard or a side-table for them. Here also must be put whatever other superfluous food cannot find a place on the table. The breakfast table will always be the criterion of the style of the house and of the taste of its mistress.

We subjoin a list of a few breakfast dishes for selection:—

ON THE TABLE.

Lobster cutlets.
Fish cakes.
Kippered salmon.
Shrimp toast.
Kidneys stewed in wine.
Kidneys broiled.
Devilled kidneys.
Poached eggs with cream.
Rumbled eggs.
Tomatoes and eggs.
Birds' nests.
Egg toast.
Ham toast.
Anchovy cutlets.
Poached eggs à la Victoria (with truffles).
Kegeree.
Omelet.
Scalloped veal.
Broiled partridge.
Broiled pheasant.
Salmi of game.
Broiled mushrooms.
Devilled legs of turkey or chicken.
Eggs à la bonne femme.
Oysters in ham (huitres au lit).
Brawn.
Oyster loaves.
Oyster etiquette.*

ON THE SIDEBOARD.

Ham—Cold Beef—Boiled or cold roast Pork—Cold Fowl or Turkey—Tongue—Cold Mutton or Lamb.

Luncheon.

The word lunch or luncheon literally means a slice of bread. It was added when dinners became late, and since that meal has long passed the supper hour of our ancestors, luncheon has become a substantial meal, in fact an early dinner, at which the children of the upper classes usually dine.

Our ancestors were content with dinner and supper only; but probably quite as much food was consumed at the two meals as is consumed at present.

* Receipts for these dishes will be found in this work under proper headings, or in "Warne's Model Cookery."

1. Cold Chickens.
2. Lemon Pudding
3. Potatoes
4. Scalloped Veal.
5. Salad.
6. Honeycomb.
7. Curried Eggs.
8. Cutlets.
9. Jam Tart.

To Lay a Luncheon.

It is possible that some amongst our readers may find the accompanying plate of a laid luncheon useful, to show to inexperienced servants as a specimen of what the table should look like.

They need only add the information that *small* knives and forks are laid for luncheon ; that caraffes of water should stand at the four corners of the table, with spoons, salt-cellars, etc. as for dinner ; and that no table napkins are required. The servants hand the plates of whatever is eaten once round and then leave the room ; no further waiting (unless for a grand luncheon party) being required.

THE LADY'S SOCIAL DUTIES.

"Use hospitality one to another without grudging."

In addition to her household duties the lady of a house has social duties to perform, which she is equally concerned in fulfilling well and gracefully. Of these hospitality comes first. There has been much falling off in the frequency of domestic entertainments since the growth of luxury has made home parties so extremely expensive.

We think it would be well if the middle classes would return in some measure to the old-fashioned heartiness of their ancestors, and ask friends to spend a social evening without giving them a supper which it would cost an immense sum to return.

The late hours for dinner stand somewhat in the way of small evening parties; still if they were given oftener we believe that much social good would arise from them. The sons of the family would not seek evening amusement so much at music halls, plays, etc., but would find it at home, and their associates would be ladies and gentlemen; while the dulness of girl-life would be exceedingly brightened by them.

We have heard a lady relate how, in the old "war time," she and her young friends used to meet often at each others' houses once or twice a week and dance to their own playing; or play round games of cards—eat a light supper of sandwiches and wine, and, as they had walked to the friend's house, so walk back again at night, escorted by a servant and a group of merry friends. And these ladies were of high station; one of them became afterwards the wife of an earl, and the speaker herself was of still better family.

Amongst the upper middle class these simple gatherings no longer exist; they only entertain expensively; much in the style of far grander fortunes, and of course their parties must needs be few and far between. But it is time to say something about the present mode of entertainment. We begin of course with dinners.

Dinner parties have become so very expensive that people of small means cannot give them; they are compelled to ask their friends separately, or to entertain them at a "kettledrum," or an evening party. The latter is not less expensive than a dinner, but is more easily managed where the servants are not numerous and the rooms are small.

Nevertheless the wife of a professional man may often have to entertain a party of six or eight, and this may be done very pleasantly if too much is not attempted and the guests assimilate well.

And here we would observe, that if the servant who waits at table—whether footman or parlour-maid or housemaid—is used every day to wait *well*, and that the lady points out any little awkwardness or shortcoming which she may perceive in his or her service, *not at the time*, but the next day, there will be little difficulty in the waiting when two or three guests come to dine; but to wait on a dinner party of eight or ten, *two*

A Table spread for dinner à la Russe with plateau of looking glass and fountain.

persons are required. Waiters can, however, be hired, or a clever housemaid, occasionally trained, can help the footman.

Dinners *à la Russe* are now universal, and are very nice, if well managed. The table is spread with fruit and flowers only; a tiny basket of strawberries in summer, being placed at each seat near the wine glasses, etc. etc. In other respects plate and glass as usual.

There should be a tiny salt-cellar and a caraffe beside each person; this will be achieved (with a party of eight) by placing the former at the end of the table, one at each corner, and one in the middle on each side. Soup and fish are handed—then side-dishes—then the principal joints—next puddings—then cheese, etc.; ices and dessert.

The tin or glass half-moons are a very pretty and new device for ornamentation; the centre may vary according to taste or means. The basket of roses given in Frontispiece, or in winter the iced bouquet (directions for making which will be found in this book) will form a pretty centre. The tin half-moons will ornament the edges of dishes, etc. Nothing should be served which the cook is not *sure* of doing well; the meal, however simple, should be excellent of its kind, and some forethought should be exercised as to the cook's power of dishing up in time the things ordered, and the capabilities of the grate or stove for cooking them. Good soup is not difficult to make, and may be prepared the day before; so also must be the jellies and blancmange. Pigeon or any game pie, vols-au-vent and patties may also be ready, and only require warming—in short, preparations might commence, to save time and hurry, at least two days before.

The following are a few moderate dinners for middle-class people:—

Dinner for Eight People.

January.

Hare Soup. Cod's Head and Shoulders. Oyster Sauce.

Side Dishes Handed.	*Principal Dishes.*
Oyster Patties.	Saddle of Mutton.
Cotelettes à la Maintenon.	Boiled Turkey.

Vegetables—Potatoes, mashed. Seakale stewed white.

Second Course.

As handed.

Brace of Partridges. Cabinet Pudding. Jaune Mange.
Punch Jelly. Cheese Fondu.

Of this dinner the soup may be made the day previously; also the oyster patties, jaune mange, and Punch jelly. The remaining six dishes would be within the compass of a moderate cook's powers; while cheerful conversation, ease, and comfort in partaking of the dinner will render it quite as possible that it may be a success, as far more pretentious entertainments.

The housekeeper must take care that the cutlets, which are generally (in London) sent trimmed and ready from the butcher, are not kept long

cut apart. A very clever and experienced lady has told us that this makes the difference between *dried up* and mellow tasting cutlets. The *joint* should hang till the cutlets are required. If sent cut from the butcher's they should not be *quite* disjointed, and should be put up close together and so tied till required. A chop, cutlet, or steak left all night before it is dressed loses great part of its juices by evaporation.

Second Dinner for Eight Persons.

MARCH.

Clear Gravy Soup, or Mock Turtle. Brill.

Side Dishes Handed.

Sweetbreads. Veal Olives.

Principal Dishes.

Calf's Head, Tongue, and Brains. Sirloin of Beef.
Vegetables—Potato Balls. Brocoli.

SECOND COURSE.

Guinea Fowl. Ratafia Pudding. Cream. Jelly.

Third Dinner.

JUNE.

Green Pea Soup. Salmon.

Side Dishes Handed.

Mousse de Volaille. Lobster Patties.

Principal Dishes.

Fore-quarter of Lamb. Boiled Chickens and Tongue.
Vegetables—Young Potatoes. Green Peas.

SECOND COURSE.

Stewed Pigeons. Gooseberry Tart and Clotted Cream or Custard.
Strawberry Cream. Iced Pudding.

Fourth Dinner.

OCTOBER.

Oxtail Soup. Stewed Eels.

Side Dishes Handed.

Curried Chicken. Kromeskies.

Principal Dishes.

Saddle of Mutton. Roast Goose.
Vegetables—Potatoes and French Beans.

SECOND COURSE.

Pheasant.
Maizena Pudding. Charlotte Russe. Apricot Tart.

More Expensive Dinners.

January.

Turtle Soup. Clear Gravy Soup.
Cod's Head and Shoulders. Cutlets of Sole.

Side Dishes Handed.

Tendons de Veau. Stewed Pigeons. Rissoles.
Fillets of Duck.

Principal Dishes.

Saddle of Mutton. Roast Turkey.

Vegetables—Potatoes. Seakale. Brocoli.

Second Course.

Partridges. Grouse.
Queen Mab Pudding. Louis Philippe's Pudding.
Lemon Cream. Claret Jelly.
Cheese Fondu. Soufflé.

May.

White Soup. Green Pea Soup.
Salmon. Sole Normande.

Side Dishes Handed.

Lobster Patties Savoury Vols-au-Vent.
Stewed Sweetbreads. Kidneys Sauté au Vin.

Principal Dishes.

Lamb stewed in Green Peas. Fricandeau of Veal.

Vegetables — Potatoes. Green Peas. Asparagus.

Second Course.

Ducklings and Green Peas. Iced Venice Pudding.
Ratifia Pudding. Orange Jelly. Chocolate Cream.

July.

White Soup. Julienne Soup.
Turbot. Spatchcock Eels.

Side Dishes Handed.

Veal Patties. Lobster Cutlets. Lamb Sweetbreads. Plovers.

Principal Dishes.

Turkey Poults. Saddle of Mutton.

Vegetables—Potatoes. Green Peas. Vegetable Marrow.

Second Course.

Sir Watkin's Pudding. Choux à la Comtesse.
Maraschino Jelly. Artichokes.

OCTOBER.

Clear Gravy Soup. Soup à la Bonne Femme.
Salmon Trout. Turbot à la crême.

Side Dishes Handed.

Oyster Patties. Fricandeau of Ox palattes. Pigeons Jugged.
Chicken à l'Estragon.

Principal Dishes.

Sirloin of Beef. Turkey Poult or Roast Fowls.
Vegetables—Potatoes. French Beans, etc. etc.

SECOND COURSE.

Grouse. Apricot Tart. Pine-apple Fritters.
Stone Cream. Milan Soufflé. Cheese Canapées.

DECEMBER.

Brown Oyster Soup. Mulligatawny Soup.
Turbot. Carpe Farcie.

Side Dishes Handed.

Houselamb Cutlets à la Royale. Paté de Foie Gras.
Poulets à la Marengo. Curried Eggs.
Roast Larks.

Principal Dishes.

Haunch of Mutton. Boiled Turkey aux Truffes.
Vegetables—Potatoes. Seakale. Brocoli.

SECOND COURSE.

Pheasants. Partridges.
Chancellor's Pudding. Leche Crêma.
Open Jelly and Whipped Cream. Blancmange.
Ramakins, or Macaroni.

ETIQUETTE OF A DINNER PARTY.

The lady who gives a dinner party should be very punctual, especially if she is one of those who have no house-keeper nor a very large number of efficient servants. She should be in the drawing-room some few minutes before her guests are expected, that she may glance around and see that everything is arranged as she would wish—chairs and sofas placed where they can be easily used, etc.

There is a sad fashion, amongst people of the middle class, of receiving their guests in a drawing-room which is not always inhabited, and in which the fire is not lighted till about half an hour before the arrival of the visitors—nothing more uncomfortable can be imagined. The room feels cold—is often damp, the fire looks newly-lighted, and there is a general sense of discomfort in it.

1. *Pineapple.*
2. *Grapes.*
3. *Apples.*
4. *Plums.*
5. *Greengages.*
6. *Apricots.*
7. *Peaches.*
8. *Melon.*

Now if the family habitually occupy the library or breakfast-room, they should take care that a fire be lighted in the drawing-room on the morning of the day on which they expect guests, so that the room may be well warmed in time. Plenty of light, well distributed, is another means of ensuring the success of a party.

The lady should advance a little way to receive her guests ; the chairs should be arranged so as not to create any confusion on their entrance ; and the welcome should be smiling and cordial, not stiff and formal.

Should a guest be late, or the cook unpunctual, the lady must not show any outward signs of annoyance or impatience, but endeavour to make the guests forget it by pleasing and amusing conversation.

Very soon after the last guest has arrived, the servant ought to announce dinner, and the host, after directing the gentlemen whom to take in, should offer his arm to the lady of the highest rank in the room, the gentleman of highest station taking the lady of the house.

Now this order of precedency in going in to dinner being likely, if violated, to give offence, it is well that the lady of the house should arrange with her husband how to marshal their guests before they arrive.

With respect to persons of title, these take precedence according to their titles ; though, as eldest sons of peers have intermediate places in the scale (so to speak), we advise the lady to have by her, Lodge's " Orders of Precedency," that she may make no mistakes. Foreign ambassadors are given the precedence of our nobility, out of courtesy, and with respect to their mission ; archbishops rank with dukes ; bishops with earls.

Ordinary foreign counts and barons have no precedency of title in England, but rank about with English baronets or great landed proprietors.

For *untitled* precedence :—

An earl's grandson or grand-daughter, and all *near relations* (untitled) of the aristocracy precede the esquires or *country gentlemen.*

Then come—

Wives of country gentlemen of no profession.

Clergymen's wives.

Barristers' wives.

Naval officers and their wives.

Military men and their wives.

There is no specified place for physicians, who, however, are ranked in the royal household as next to knights, and whose wives therefore would go out after those of barristers.

These rules appear doubtless to many unnecessary and absurd, but they are not really so ; and perhaps there is no truer sign of good breeding than to know how to render " honour to whom honour is due." Assuredly they are of great use to prevent personal piques at supposed preferences and neglects.

The lady of the house should be at leisure to give her whole attention to her guests. If a clergyman be present he is asked to say grace ; if not, the gentleman of the house does so.

The present fashion of giving dinner parties *à la Russe,* is far preferable to the old mode of having the joints, etc., on the table ; but it supposes

that you have a sufficient number of waiters, as otherwise it would be impossible and ridiculous.

The table, then is laid thus : in the centre is some exquisite ornament —an alabaster stand crowned with pine-apples, beneath which hang clusters of grapes ; or a frosted-silver tree, with deer, etc., beneath it, holding on its branches glass dishes filled with the most picturesque fruit ; or any of the centres of which pictures are given in this book ; but it is now the fashion to have the centre ornament of flowers very low. Round it the dessert dishes are put, intermixed with dishes of preserve, sweetmeats, etc. At the house of a nobleman, with whom we occasionally dine, the table—a round one—is encircled by small silver camels, bearing on their backs silver baskets, holding tiny fruits or sweetmeats.

Menus, or dinner cards, are placed the length of the table, one for the use of two persons ; on these the names of the dishes are written, so that the guests may select whatever they prefer.

Soup is then handed ; sherry is offered after it. Fish follows soup.

Then the made dishes (which would be side dishes were they on the table) are handed, duplicates of each being handed simultaneously on each side of the table.

After these follow the *pièces de resistance*—turkey, lamb, mutton, etc. Then follow game, puddings, tarts, jellies, etc. etc.

During dinner the hostess should chat pleasantly with her guests, and not be too much engrossed with the dinner, or with watching the servants waiting.

Any mistake or slight solecism will be much less noticed if an anxious glance does not direct attention to it.

We have described a dinner *à la Russe;* but as our book is meant also for readers of small income, we shall describe a dinner on a smaller scale, and in the present mode of combination of the old and new fashions.

In the centre of the table an ornament, holding fruit, etc. (as we have described already), should be placed; close round it the dessert-dishes with fruit, etc.

Soup is put opposite to the lady of the house. If there are two soups, a tureen will be at each end and be succeeded by two kinds of fish.

It may be that the soup is before the lady, and the fish at the same time placed before the gentleman. The butler holds the plate close to the tureen, and one ladleful is sent to each person. The butler gives the plate, when filled, to the footman, who carries it round to the guests.

The gentleman on her right hand generally saves her the trouble of helping it.

The soup and fish are succeeded by the meat and chickens, or turkey. The inevitable saddle of mutton, or the fore-quarter of lamb, are put before the gentleman ; the chicken or turkey before the lady, who is assisted in carving by the gentleman beside her.

But before either of these *pièces de resistance* are uncovered, the servants hand the *side-dishes*, which are *not* now put on the table.

The second course follows : the game is put before the gentleman ; the lady has the pudding ; jelly, blancmange, etc., are at the sides.

When the second course has been removed, and cheese handed round, grace is said again, and the dessert follows.

Ice is handed round first, then the separate dishes of fruit, etc. After which the servants leave the room. The wine is passed round the table, and the gentlemen help the ladies to it as well as to any more fruit which they may require. This is an especial time for conversation.

Sherry is offered once by the butler after soup, or oftener if there is no champagne or hock. Hock is offered with the fish, or chablis takes its place. Champagne is taken round three or four times immediately after the first *entrée* has been served. Sherry and claret only are put for the dessert. Port and Madeira are rarely seen now.

As soon as the hostess thinks that her lady-guests have finished their dessert, she bows to the lady of the most distinction, and then all the ladies rise and leave the dining-room—the hostess remaining the last to go out. The ladies amuse themselves in the drawing-room till the gentlemen join them.

During the interval the hostess must endeavour to amuse her guests as she best can. Coffee is handed, and sometimes a young lady will play or sing, and the hostess must never relax her *quiet* and unobtrusive endeavours to make the evening pleasant. Observation, tact, and a little information on the events of the day, are required to make a perfect hostess.

Pleasant and lady-like habits at table are easily acquired, if carefully observed daily. But "manner" requires as much, or *more*, practice than music, and no one will attain a polished ease in society unless she practises its habits continually, and at all times, in her domestic circle. She cannot *put on* a habit, or a graceful manner, when she will; it must be a thing of daily life. And, allow me to say, that care bestowed upon it will add greatly to the comfort and happiness of home, as well as relieve the oppression of awkwardness and shyness in society.

Now we will describe a plain family dinner, which taxes more closely the attention and hospitality of the host and hostess.

In the dinner parties we have described the hospitality is dispensed by the servants; when a quiet family, with perhaps one or two guests, meet round the dinner table, a little more supervision of their guests' comforts will fall to the lot of the lady and gentleman of the house.

Soup and fish are placed on the table, and *sent* to each person. It is rude and inhospitable to ask a guest whether he will take soup *or* fish. He will probably take both; and it limits him to one by the question. It should be helped and sent round by the servant waiting.

The same mode is pursued with the side dishes—they are handed round; the end dishes are helped and handed round.

It has been the fashion for the last two years to hand cold and hot dishes alternately at dinner. Vegetables and sauces are handed as quickly as possible by the footman or parlour-maid. Wine is offered by the servants after soup or fish and during dinner, as described above.

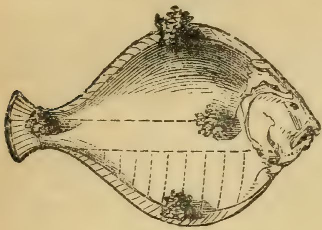
A lady ought to know how to carve, and it is well for the daughters of a family to learn it in their youth, that they may not be awkward at their own table when they marry.

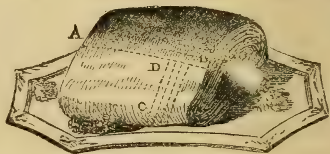
We subjoin a few plain directions for carving and helping.

Of soup we have already spoken.

Fish is cut with a silver fish-slice, or the more modern large silver fish knife and fork.

Large flat fish, as turbot, brill, John Dorey, etc., must first be cut from

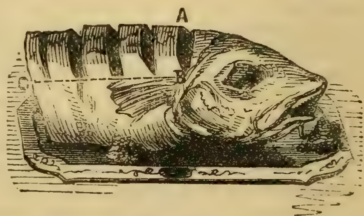

Turbot.



Middle Cut of Salmon.

head to tail down the middle, and then in portions across to the fin, which being considered a delicacy, is helped with the rest. (*See cut.*)

Salmon is cut in slices down the middle of the upper side, as from A to B, and then in slices across D to C, and a little of the "thick," or upper side, and "thin," or under side, are put on each plate.

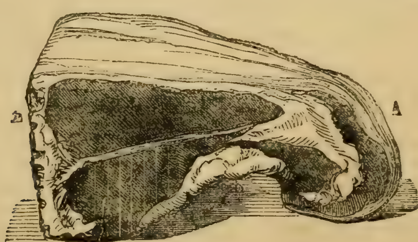


Cod Fish.

A mackerel divides between four people; the fish knife is passed *between* the upper and under side from head to tail, and each side is halved to help. Cod is cut crossways, like salmon, from C to B, and in down slices as from A to B, and a small piece of the sound is sent with each helping. Small fish, as smelts, are sent whole, one on each plate; as are whiting.

Fried soles are cut across right through the bone. The "shoulder," or head end, should be first helped.

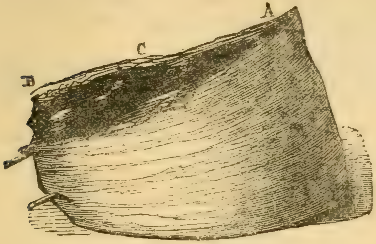
A sirloin of beef is cut *across* for the under-cut, and lengthways for the



Sirloin of Beef.

upper. You should ask your guest if he or she prefers the under-cut,

which is by some considered the most delicate part of the beef, and is disliked by others. Slices from the under-cut should be thick.



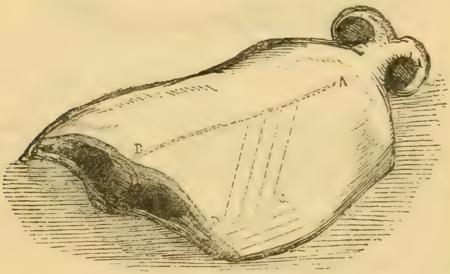
Aitch-Bone.

Rolled ribs, and a round of beef, are easily carved in horizontal slices over the whole surface. The slices should be very thin.

Boiled beef should also be cut in thin horizontal slices the size of the joint itself in length and breadth. (*See cut.*)

Mutton appears on the table in four forms—the saddle, the leg, the shoulder, the loin.

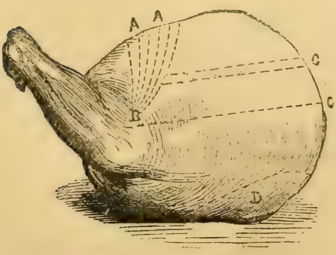
The saddle is the joint ordered for a large dinner-party. It is cut in very thin slices close to the backbone; B to A and then down-



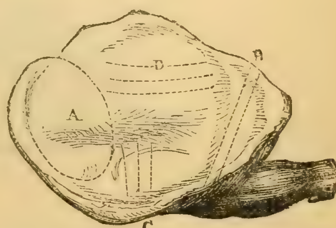
Saddle of Mutton.

wards from A to D and C; but a lady is scarcely ever required in the present day to carve a saddle of mutton.

A shoulder must lie with the knuckle towards your right, and the blade-bone towards your left hand.



Shoulder of Mutton.



Shoulder of Mutton

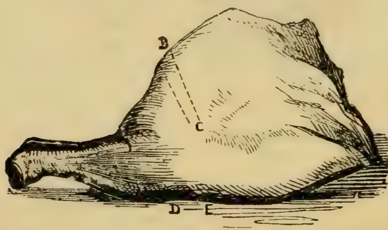
In the middle of the edge of the part farthest from you place the fork, and then give one sharp cut from the edge to the bone. The meat flies

apart, and you cut rather thick slices on each side of the opening A to B till you can cut no more.

You will then find two or three slices from the centre bone to the end B to C. Afterwards the joint must be turned over, and slices cut from the under-side.

Some people, instead of cutting the joint in this manner, begin with slices cut lengthways near the middle of the joint from the end to the knuckle, and it is a better way.

A leg of mutton must be placed with the knuckle towards your left

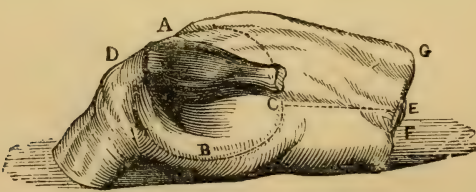


Leg of Mutton.

hand; you then cut into the side farthest from you towards the bone B to C, helping thin slices from the right and thick slices towards the knuckle. The little tuft of fat near the thick end is a delicacy, and must be divided amongst your guests.

A loin of mutton is carved either through the joints, which brings it into the form of "chops," or it is cut lengthways, in a parallel line with the joints. The latter is the best mode for a lady, but a loin is rather for family consumption than for guests.

A fore-quarter of lamb consists of a shoulder, the breast, and the ribs, and, alas! when the carver has to dissect it! If a lady is obliged to carve this joint, she must first place her knife upon the shoulder, draw it through horizontally, and then remove the joint whole, placing it on a separate

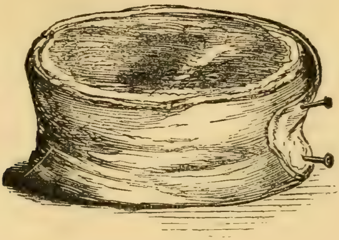


Fore Quarter of Lamb.

dish, which is held for its reception. She must then cut off the breast and separate the ribs (*see cut*); but the cook should always cut off the shoulder, and leave it *on* the joint.

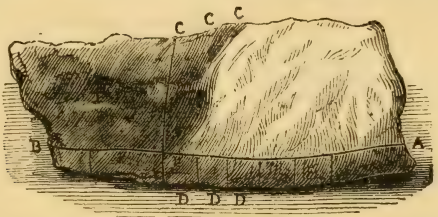
The hind-quarter consists of a leg and loin.

A fillet of veal is cut in horizontal slices like a round of beef; they



Fillet of Veal.

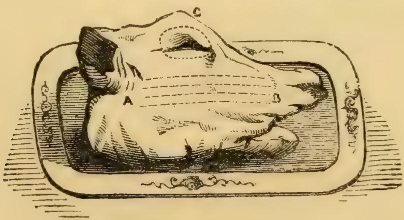
must not be too thin. The stnffing in the centre is taken out and helped with a spoon.



Breast of Veal.

In a breast of veal the ribs should be first separated from the brisket, after which either or both may be sent round.

A calf's head must be cut down the centre in rather thin slices on each side. The meat round the eye is scooped out; it is considered a delicacy. A small piece of the palate and accompanying sweetbread must be sent on each plate.

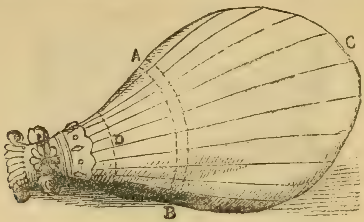


Half of Calf's Head.

Roast pork is never seen at dinner parties, but is occasionally served at a family dinner.

The leg is carved like a leg of mutton, but the slices should be thicker and not so large.

A ham may be cut in three ways—1st. By beginning at the knuckle, which must be turned towards your left hand, and cut in a slanting

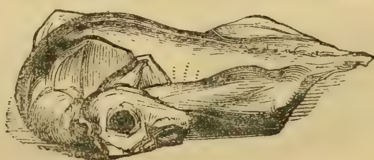


Ham.

direction; or at the thick end, which is then turned towards your left; or in the ordinary manner, like a leg of mutton, beginning in the centre.

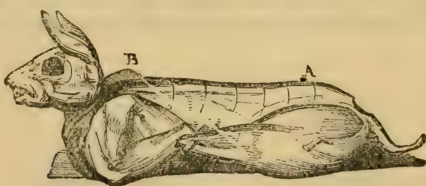
The slices must be as thin and delicate as you can possibly cut them. One slice is given as accompaniment to fowl or veal.

A rabbit has the legs and shoulders removed with a sharp-


Boiled Rabbit.

pointed knife, then the back is broken into three or four pieces at the joints.

Hare is thus carved: First take off the legs. Cut two long thin slices off each side of the back B to A; then take off the shoulders, and break the back into four pieces with the fork. Cut off the ears,

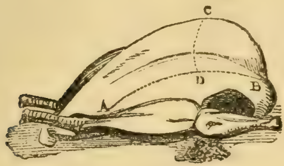


Hare.

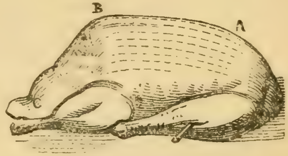
insert the point of the knife exactly in the centre of the palate, and drawing it to the nose, split the head in two. But when only a small portion of the hare is eaten, and it is only served at second course, it is more elegant for a lady to help a portion of the side *with a spoon*, as we have often seen done.

The best parts of a hare are the slices from the back, the head, and ears. But ladies never eat the two latter. They should be sent to any gentleman guest who is known to be an epicure.

A chicken is carved thus : Take off the wings, cut slices from the breast, take off the merrythought and side bones. The liver wing is the best part of the chicken after the breast ; but you should help the breast



Roast Fowl.



Boiled Turkey.

first, then both wings. If you have many to help, manage to reserve a slice of white meat to send with the legs and sides.

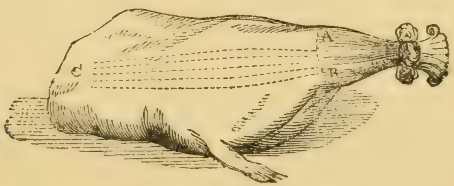
A partridge is carved like a fowl ; so is a pheasant.

A pigeon is cut in halves right down the middle, and half is sent at once to the guest.

A snipe is treated in the same way.

Very small birds are sent whole.

A turkey and goose are helped by cutting slices off the breast, and then the wings and legs are taken off. Wild duck is helped in the same manner.



Haunch of Venison.

A haunch of venison should be cut from A to B close to the knuckle. (*See cut first.*) Then from C to A.*

Coffee is sent to the gentlemen in the dining-room. Tea only is handed after dinner when the gentlemen have left the dinner-table.

MORNING PARTIES.

Morning parties, *so called* (royal breakfasts occuring at 5 P.M. occasionally), are generally given during the summer or autumn months. In town they are garden parties, breakfasts, five o'clock teas, or concerts ; in the country, lawn-tennis or archery meetings.

At the garden parties a splendid déjeuner à la Fourchette is presented to the guests.

A garden party begins at about four o'clock, and usually ends at

* For fuller directions for carving see Warne's "Model Cookery."

seven, but very frequently the guests conclude the evening by a dance, and sometimes a regular dinner-party and ball follow it.

But we will speak of the ordinary lawn-tennis party.

Invitations to garden parties name the hour of meeting and that of leaving, generally from four to seven, and state whether lawn-tennis will be played, etc. Croquet is now completely exploded as a fashionable game.

It is usual to play until about six o'clock ; then the players go into the house to tea.

The "tea" is a substantial meal, consisting of all kinds of cold delicacies, chickens, *mayonaise*, ham, ducks, etc. etc. ; all kinds of sweets and fruits ; tea and coffee. There is frequently champagne for the gentlemen, but wine is not *de rigueur*, and is rarely given.

These country meetings are remarkably pleasant and social.

After tea, unless invited to remain for the evening, the visitors take their departure.

At morning concerts no refreshments are offered.

"Five o'clock Tea" is now a very popular form of entertainment, though more favoured by ladies than gentlemen. For the large and ceremonious five o'clock tea (of generally from fifty guests and upwards) professional music, both vocal and instrumental, is generally provided. The tea is served in the dining room, and consists of tea and coffee in large urns, sherry, champagne cup, claret cup, ices, fruit, fancy biscuits and cakes, thin bread and butter, potted game, sandwiches, etc. No plates are used except for ices and fruit. For small teas similar refreshments are given on a smaller scale, and the tea is served in the smaller or back drawing room ; it is dispensed then by the ladies of the family themselves, not by servants ; in the small friendly five o'clock tea only tea, cakes, and bread and butter are served, and there is no entertainment but conversation. Carriages are always kept waiting at afternoon teas, for ladies frequently only remain for a quarter of an hour. At these afternoon teas the hostess does not ring to order the door to be opened to the departing guest, or for her carriage. The lady makes her own way to the hall and the servants there call up the carriage.*

EVENING PARTIES.

Evening parties vary extremely. They are sometimes for cards, sometimes for music, sometimes for a conversazione with occasional singing, sometimes a friendly dance ; but this should be specified in the invitation.

Evening parties commence generally at nine o'clock, but occasionally at eight, and generally end at half-past eleven.

The rooms should be prepared for the guests at least two hours previously, so that the hostess may not be hurried. Plenty of flowers should adorn them ; if the evening is for conversation, etc., only, a chess table and a whist table should be placed for any persons who may prefer them. The piano should be open ; choice books and prints or photographs placed on the table, and the seats arranged *not* round the room, but in groups, so that people may sit about it as they please.

A great deal of light—in the form of wax candles it is pleasantest—

* See "Manners and Tone of Good Society."

should be given, and ventilation should be as good as it is possible to give.

There should be a room for the guests to uncloak in; the same apartment sometimes serves for tea and coffee.

A long table should be covered with a white table-cloth; two neatly-dressed maids should preside over tea, coffee, cake, biscuits, and thin bread and butter, and as each group or individual finishes tea or coffee they leave the room, and the footman announces them in the drawing-room. Here the hostess receives them at the door kindly and graciously, and they pass about the rooms to greet friends, etc. etc.

The hostess, when all are arrived, should move about amongst her guests, seeing that every one is amused, and having herself a bright word and a kind smile for every one. Cards, music, and conversation should be set afloat. Tact or an earnest desire to promote her friends' pleasure will make a good hostess. Trouble must not be spared.

Supper must be served at ten or half-past ten.

As few families possess glass, china, and plate enough for a large gathering, these as well as rout seats, if required, are to be hired at glass and china shops. If a pastrycook is employed to supply the supper, he will find also the things required.

For mere friendly suppers a pastrycook need not be employed, as the lady's taste will superintend laying the supper, which may be light and elegant merely. When space is wanting, the ladies frequently sit down to supper alone, and the gentlemen stand by them and wait on them; then the ladies leave the supper room and the gentlemen take their place. The servants in this case should be told to replace half finished or empty dishes by duplicates.

Occasionally people who wish for music or a little chat do not sit down to supper at all. A tray is brought into the drawing-room or a table spread in a corner, and everything is handed and eaten where the guest is. In this case only sandwiches, oyster patties, veal patties, lobster patties, and sweets of all kinds are served, the late dinners of the present day rendering light suppers imperative unless they follow dancing, and are very late.

During the evening, when the party is large and formal, ices and wine are occasionally handed. We give a few lists of suppers for evening parties.

The dress for these entertainments varies, but the present fashion is half toilette—not ball costume, unless dancing is specified on the card of invitation.

Light Supper on Tray.

Sandwiches of ham, tongue, and beef. Lobster patties or oyster patties, veal patties, jelly. Blancmange or cream, tartlets and cheese-cakes. Cake, biscuits. Sherry. Claret cup in summer, or mulled claret in winter.

Small Supper.

Cold Chicken.

Ham Sliced.
Tongue Slices.

Flower Ring, and Preserves.
Flower Ring, and Preserves.

Claret Jelly.
Lemon Cream.
Strawberries.
Cherries.
Cheesecakes.
Tipsey Cake.
Tartlets.
Sandwiches of Beef.
Ornaments.
Sandwiches of Ham.
Trifle.

Flower Ring.
Flower Ring.

Stone Cream.
Calf's Feet Jelly.
Cherries.
Strawberries.
Veal Patties.
Lobster Patties.

Cold Lamb, Fore-quarter.

Winter Supper.

Cold Chicken.

Scalloped Fish (Cod).
Oyster Patties.

Meringues.

Grapes.
Trifle.
Oranges.
Sandwiches.
Cheesecakes.
Partridges.
Vase of Flowers.
Pheasants.
Tartlets.
Sandwiches.

Tipsey Cake.

Oranges.
Grapes.

Cream.

Vols-au-Vent.
Scalloped Oysters.

Ham.

THE BALL-ROOM.

Invitations to a ball should be issued by the lady of the house in her own name only, about three weeks before the night fixed on for it.

The requisites for an agreeable ball are—a good room, good music, and a good supper. It is of all entertainments the most extravagant—a large ball in London generally costing about 300*l.* Great quantities of flowers are used to adorn the rooms; they often cost 50*l.*; lights are placed before reflectors on the walls—as chandeliers are dangerous, and gas gives an unbecoming glare. The carpet should be taken up, the floor polished—but not so as to blacken the ladies' shoes. A good band should be hired for the occasion.

The lady who gives the ball must linger till supper-time near the door of the ball-room, to receive and welcome her guests. She should have a smile and a few gracious words for every one.

The sons and daughters of the family must take care to provide

partners for their friends. A well-bred young lady does not dance till she has seen that her young lady-friends, generally, have partners.

The right of introducing partners rests chiefly with the ladies and gentlemen of the house ; but a chaperon may introduce a gentleman to her charge, and an intimate gentleman-friend may introduce an acquaintance to a partner.

A young lady must be very careful how she refuses to dance with a gentleman ; and she ought, indeed, to have a good reason for so doing. She can only say she does not wish to dance *that* dance (with which answer a gentleman will be satisfied), or that she is engaged.

But if she refuses one gentleman, she has no right to accept another for the same dance ; and she must be extremely careful not to engage herself to two gentlemen for the same dance.

Flirtation is always vulgar, but it is perhaps less dangerous in a ball-room than out of one ; still, very well-bred girls will not dance too often with the same partner, nor linger too long away from their chaperon. Three dances are quite as much as a young lady should give to the same partner.

Public balls are not much frequented by people in good society, except in watering-places and country-towns ; even then a young lady should only be seen at two or three in the course of the year—as, for example, a county-ball, a race-ball, a hunt-ball. At public balls there are generally three or four stewards, who have to order the dances, change them if desirable, and introduce partners to the young ladies. But young ladies of good station generally dance with members of their own party. They must on no account dance with a gentleman at a public ball unless he be presented by the stewards, or by a friend.

It is not necessary to recognise a ball-room acquaintance the next day, unless you choose to do so. The introduction is for a dance, and not for future acquaintanceship. To act on it afterwards depends entirely on the will of the lady ; and she is not ill-bred if she ignores her partner's existence the next day.

If you give a carpet dance to your young friends, take care to provide at least two musicians : a harpist and a pianoforte player are the best. You should on no account tax the good nature and fingers of your friends by asking them to play for you.

A ball supper is far beyond the means of any ordinary household to prepare. It would be cheapest and best to engage a first-rate pastrycook to supply it at so much a head. He will then undertake the whole responsibility, and the thing will be well done. During the last season a novel and delicious mode of decorating a ball-room was introduced. Pillars made of solid blocks of Norway ice, clear and sparkling like diamonds, were placed at intervals down the room on each side. They stood in great pans in which water-lilies had been placed, and as they slowly melted in the heat and dripped into these great tubs of stone, the lilies floated on the water. The coolness of the air produced by this device can scarcely be conceived if not felt.

Ball dress is the extreme of full dress, and should be that which is the fashion of the day.

Christmas Dinners.

MODERATE.

Mock Turtle Soup. Cod.

Side Dishes Handed.

Stewed Mushrooms and Rabbit Curry.

Principal Dishes.

Sirloin of Beef and Yorkshire Pudding. Roast Turkey

Vegetables—Potato Balls. Sea Kale. Stewed Celery, or Jerusalem Artichokes.

SECOND COURSE.

Plum Pudding. Mince Pies.
Grouse. Lamb's Wool.

EXPENSIVE.

Mock Turtle Soup. Swan Giblet Soup.
Brill. Cutlets of Cod.

Side Dishes Handed.

Oyster Patties. Truffles au Naturel.
Rabbit Curry. Kromeskies. Soufflé of Chicken.

Principal Dishes.

Swan. Boar's Head.

SECOND COURSE.

Woodcocks. Pheasant.
Plum Pudding. Mince Pies. Wassail Bowl. Furmity.

Cold Spring and Summer Luncheon for a Large Party.

Cold Salmon.

Apricot Jam Tart. Jaunemange.
Lobster Salad. Ham. Strawberries.
Jelly. Custards.
Chickens and Tongue. Flowers. Pigeon Pie.
Cherries. Mayonnaise of Chicken. Lobster Salad.
Cutlets of Fowl and Tongue. Chocolate Pastry.
Strawberry Cream. Cold Cutlets.
Fore-quarter of Lamb.

CHRISTMAS RECEIPTS.

To Dress a Boar's Head.

(An Ancient Christmas Dish.)

After scalding off the hair from the head, and removing the snout, have it thoroughly cleaned and boned; then place it in a deep pan, with the tongue and about two pounds of the boar's flesh, add a bundle of thyme, parsley, and sage, one eschalot, about two tablespoonfuls of salt and a few peppercorns;

pour over the whole sufficient vinegar and water to cover the head, and let it stand three days; then drain it from the liquor and fill up in it every vacancy (made by withdrawing the bones) with the tongue and the neck, cut into very *thin* slices, and rolled together; when the head is filled. and its form perfected sew it up and tie it in a cloth.

Put it into a stewpan, with the liquor drained from the head, a few cloves, one tablespoonful of salt, and a pint of sherry; let it simmer slowly for seven hours, then take it out, and when *quite* cold, remove the cloth and the stitches. Place it in a dish, glaze* it well, and stick in the tusks, put a lemon in its mouth, and serve it on a folded napkin, decorated with pieces of Christmas and rosemary.

To Cook a Boar's Head.

The following receipt for dressing a boar's head is a French one:—The head must be well singed, and rubbed with a piece of brick to remove the hair. Scrape it with a knife, and clean it well; bone it, and cut out the two jaw-bones, and take off the snout; slit it underneath, so that it may stick to the skin on the top, and take out the brain and tongue, and rub some salt into all the parts of the flesh. Put the head together again, wrap it up and tie it in a cloth, then put it into a saucepan of hot water, with some leaf-fat of a pig, two bay leaves, all kinds of sweet herbs, coriander, and aniseed, salt, nutmeg, and cloves pounded, some rosemary, and an onion. When half boiled add a quart of wine, and let the whole boil for twelve hours. When sufficiently boiled, let it cool in its own liquor. When cold, put it in a dish and serve it up. The tongue may also be boiled in the same liquor. Put a lemon in the mouth, and decorate with sprigs of rosemary and Christmas.

Boar's Head Sauce.

Juice of two Seville oranges, one spoonful of mixed English mustard, four spoonfuls of currant jelly, a little pepper and salt, half a pint of port wine: mix all together and serve.

Roast Swan.

This splendid dish, worthy of a prince's table, is only too locally known. It is, of course, only eligible for the table in its cygnet state. Young swans are called cygnets from the Latin name for the parent bird, *cygnus olor*. The swan of our rivers and ornamental waters is the mute or tame swan, kept from flying away by having one of its wings pinioned. The mute swan pairs, and builds its nest amongst the rushes on the shores of small islands in the river or the banks of pieces of water. With wonderful instinct these nests are built up to some height, in order to preserve the young birds from any sudden rising of the waters. The cygnets when hatched are of a slaty grey, which grows lighter as they grow older. The cygnets of the wild swan are white.

But it is of the grey cygnets we have to speak. They are hatched in June. If it is intended to eat them they must be taken from their parents and put into a separate swan pond, at the end of August or first week in September.

After they have been "hopped or upped," as it is called, from their native place grass is thrown to them

* A Glaze.—One dessert spoonful of Indian Soy and the white of one egg. This is sufficient for two Hams or three Tongues, or for rather more than a Boar's head.

twice a day with their other food for a fortnight. They are fattened on barley; a coomb each cygnet suffices for the fattening. The corn is set in shallow tubs just under water.

Cygnets can only be fattened before the white feathers appear; after that no feeding will do any good; as soon as a white feather shows they will cease fattening, no matter what food they have. They can consequently only be eaten in December, and are a capital and very magnificent Christmas dish. Their weight then will be from 25 lbs. to 28 lbs.

We give now the "how to cook swans" supplied to the Publishers from the place where the dish is native, *i.e.* Norfolk.

Time, two hours for 13 lbs. weight. Cygnet must not be skinned; pick the bird, and truss like a goose; take two pounds of rumpsteak, chop it fine, season well with spice, a piece of onion or shalot, and butter. Rub the breast both inside and outside with beaten cloves, then stuff with the above, taking care to sew the bird up carefully and to tie it up very tightly on the spit, so that the gravy may not escape. Enclose the breast of the Swan in a meal paste, after which cover the whole bird with paper well greased with beef dripping. About a quarter of an hour before the bird is taken up remove the paper and the paste, baste well with butter and flour till brown and *frothy*. A swan of 13 lbs. weight requires about two hours roasting, with a fire not too fierce. Cut out some tiny swans in white turnip for garnish, put a swan (in turnip) on each leg and each wing, and a paper frill, nicely cut, about the shoulders.*—*See Plate.* A squeeze of lemon improves swan when eaten, and fried bread crumbs should be served with it.

Swan Giblet Soup.

Cut six pounds of the knuckle of veal, and one pound of lean ham in a large dish, add three onions, two turnips, one carrot, two heads of celery, a small piece of sweet basil, marjoram, thyme, parsley, and bay leaf, and a tablespoonful of salt. Butter a stewpan lightly, put in the whole of the ingredients, add five cloves, two blades of mace, and half a pint of water, stew it over a brisk fire about twenty minutes; when it becomes a nice light brown colour

---

* TO ROAST A SWAN.

Take three pounds of beef, beat fine in a mortar,
Put it into the Swan—that is, when you've caught her.
Some pepper, salt, mace, some nutmeg, an onion,
Will heighten the flavour in gourmands' opinion.
Then tie it up tight with a small piece of tape,
That the gravy, and other things may not escape.
A meal paste (rather stiff) should be laid on the breast,
And some whited brown paper should cover the rest.
Fifteen minutes at least ere the swan you take down,
Pull the paste off the bird that the breast may get brown.

THE GRAVY.

To a gravy of beef (good and strong) I opine,
You'll be right if you add half a pint of port wine:
Pour this through the Swan—yes, quite through the belly,
Then serve the whole up with some hot currant jelly.

add eight quarts of water, directly it boils place it at the corner of the stove, scald the giblets in boiling water, take them out and cut them into joints, the gizzard in four pieces, put them into the stock, and let them simmer gently until they are quite tender, take them out, strain the gravy through a cloth, skim off every particle of grease, put it into a clean stewpan with the giblets, and thicken it with arrow-root dissolved first in cold water, but do not make it too thick; finish by adding half a pint of sherry, the juice of half a lemon, and two grains of cayenne.

Lamb's Wool.

Boil some large cooking apples till quite tender, add to them nutmeg and cloves; beat them up to a pulp, with enough powdered sugar to sweeten them, squeeze over them the juice of a lemon, pour over them part or the whole of a bottle of sherry as required, with a wineglass of brandy; beat well together, and serve in a glass dish. Or,

Take a quart of milk and half a pint of sherry, make a nice white wine whey with it; roast some crab apples, drop them in the whey, and send up hot in a china bowl.

Furmity.

Furmity, probably originally Frumenty, from *frumentum*, the Latin for wheat, is one of our oldest Christmas dishes.

It is made of wheat, milk, wine, or brandy, and plums, thus:—Put a quarter of a pound of wheat into a saucepan with two pints of milk, and boil it until it is swollen, but not broken; then add a quart of new milk, two ounces of raisins, two ounces of currants, and sugar to taste; flavour with cinnamon, and boil it for a quarter of an hour; then stir in a wineglass of good brandy or two wineglasses of sherry (the last is best), and serve.

Punch.

Three lemons, half a pint of rum, half a pint of brandy, sugar to taste, two quarts of boiling water.

Peel the lemons as thin as possible, pour half a pint of boiling water over them, and cover them closely; let them stand till the essence is thoroughly drawn out of the lemon peel; put the whole (water and lemon peel) into a very large jug, add the rum, brandy, and the juice of two lemons, and sugar; pour boiling water on it till it is of the strength you require; strain it into a china bowl and serve. If it is wished to be drunk cold it must stand before sending up. Steam the bowl before the punch is poured into it hot or it will, in frosty weather, crack.

Punch can be made with the rum alone; it is then much cheaper.

Wassail Bowl.

One bottle of sherry, half a pint of cold water, six or seven eggs, according to size, quarter of a pound of powdered sugar, a little nutmeg, and a few cloves, half a pound of macaroons, half a pound of ratafias, twelve spongecakes, one lemon.

Grate the biscuits into an old china bowl, and squeeze a lemon over them; beat the eggs thoroughly with the sugar and spice; pour the wine and water into an enamelled saucepan; stir till they boil; then pour them by degrees over the eggs, stirring one way all the time. If it does not thicken put it on the fire and stir till it does; then pour it hot over the cakes. Or,

The Wassail Bowl.

Ingredients: One pound of macaroons, one pound of ratafias, twelve

spongecakes, one lemon, one bottle of sherry, one quart of custard.

Crumble the cakes altogether and squeeze the lemon juice on them, pour over them the greater part of the bottle of wine, at least enough thoroughly to saturate them; lay on the top a rich custard.

Make this sweet dish in an old china bowl. It makes an excellent *pair* with the punchbowl.

Punch Jelly.

Two ounces of isinglass, one pint and a half of water, two large lemons, two pounds of loaf sugar, two large wineglasses of brandy, the same of rum.

Peel one lemon, put it with the isinglass into the water, and dissolve the isinglass; put the juice of the lemons and two pounds of loaf sugar to the two wineglasses of brandy and the rum; strain the isinglass water upon the lemon juice and spirits; place it over the fire to become hot, but do not let it boil; let it stand a few minutes to settle, strain it through a fine hair sieve into the mould; stand it in a very cold place, at Christmas it will not require ice to harden it; shake it the next day gently into a glass dish; stick a little spray of holly in the top.

Winter Luncheon Party.

Roast Turkey.
Mutton Cutlets. Cold Fowls.
Jelly of two colours.
Grouse. Tartlets.
Potato Balls. Custard pudding.
Ham. Vase. Tongue.
Lemon Cream. Cruet Stand. Potato Balls.
Neapolitan Pastry. Partridges.
Blancmange.
Cold Fowls. Veal cutlets.
Large Game Pie.

Lawn Tennis Tea.

Tea.
Strawberries.
Cold Cutlets. Cold Fowl and Tongue.
Cake.
Pigeon pie. Lobster Salad.
Vase.
Bread. Butter.
Whipped Cream.
Ham. Quarter of Lamb.
Cherries.
Anchovy Cutlets. Toast.
Lobster Salad. Mayonnaise.
Tartlets.
Lemon Cake. Sweet Biscuits.
Coffee.

THE WEDDING.

The *trousseau,* breakfast, and wedding-cake, are given by the bride's family.

The bridesmaids are chosen, and the bridegroom's "best man," and the guests are invited.

The number of bridesmaids varies from two to eight. The bride generally dictates their dress, which should be all alike. If the bride is young, the bridesmaids should be young also; if the lady be middle-aged, her bridesmaids may be any age.

A widow has no bridesmaids. Widows and ladies past their first youth generally wear bonnets. A young bride should wear a veil, confined round the head by a wreath of orange-flowers, or lilies of the valley.

As soon as the carriages are at the door, the bridesmaids and members of the family set off for the church. The bride goes next with her father; in some cases the mother remains at home, but ladies now generally attend their daughters to the altar. If the bride has no father, her nearest relative, or the friend "who gives her away," accompanies her in her carriage.

The bridegroom, and his best man, and the bridesmaids ought to be waiting in the church-porch. The father of the bride gives her his arm, and leads her to the altar. Her bridesmaids follow, and cluster behind her. The chief bridesmaid holds her gloves and bouquet at the altar.

The bride's bouquet should be formed of white roses—if in season—azaleas, white camellias, and a very little orange-blossom, or whatever *white* flower may be obtainable.

The bride quits the church with the bridegroom, and returns home with him alone.

The breakfast follows; sometimes the bride and bridegroom do not remain for it, but usually they are present.

The wedding-cake occupies the centre of the table—at each end are tea and coffee. The viands are cold, and may be as many and as costly as you please. The wedding-cake is cut by the nearest gentleman, and handed round.

The clergyman who performs the marriage ceremony is always invited to the breakfast.

The father proposes the health of the bride and bridegroom; the latter is expected to return thanks. The bridegroom's man gives the health of the bridesmaids—for whom the bridegroom rises to return thanks. The health of the bride's father and mother is generally proposed by the bridegroom's father. The speeches are made as short as possible.

Gentlemen do not remain after the ladies at a wedding breakfast. The bride retires and changes her bridal attire for a travelling costume. This should be good but plain, like a handsome dress for morning-calls.

Presents are usual from the bridegroom to the bridesmaids. The bride also will generally bestow some *souvenir* upon each.

The evening commonly concludes with a ball. Cards may be sent or not, as preferred; if *not* sent, the omission should be announced (with the marriage) in the *Times*.

Wedding Breakfast in Summer.

Cold Fore-quarter of Lamb.
Wedding Cake.
Veal Pie. Chicken Pie.
White Grapes.
Cold Salmon. Pigeons in Jelly.
Cherries. Cream. Strawberries.
Hams. Epergne. Tongue.
Flowers.
Cold Ducks. Galantine de Veau.
Lobster Salad. Blancmange. Lobster Salad.
Jelly.
Apricots. Peaches.
Pigeons in Jelly. Purple Grapes. Cold Salmon.
Sponge Cakes.
Wine Jelly. Whipped Cream.
Cold Chickens and Tongue.
Tea and Coffee.

Wedding Breakfast in Winter.

Soup.
Cold Fowls.
Jelly. Cream.
Pheasant. Sponge Cake. Pheasant.
Oranges.
Pigeon Pie. Venison Pasty.
Vase.
Ham. Tongue.
Wedding Cake.
Tartlets. Cheesecakes.
Veal Pie. Vase. Game Pie.
Candied Fruits.
Partridges. Partridges.
Blancmange,
Cutlets. or Pâté de fois gras.
Jaunemange.
Pressed Beef.
Tea. Coffee. etc.

COUNTRY VISITS.

Visiting in the country is always pleasant. Nowhere does society present a more attractive aspect than at the well-regulated country-seat.

The lady who thus receives guests will, however, remember that the truest good breeding and the best means of ensuring the pleasure of her guests, is to leave them as much freedom to do what they please as possible.

The guest's bedroom should be furnished with a writing table, on

which the lady will place an inkstand, blotting book, and stationery; and also a Bible. A bouquet or two about the room in summer, and a fire in winter, will give the chamber a homelike air of welcome.

If the visitor has no maid with her, the lady's maid or the upper housemaid should be sent to see if she requires any attendance, and to assist her to unpack if she likes any aid.

From breakfast-time till luncheon a visitor amuses herself, either reading, working, writing letters, or strolling in the grounds, but on no account intruding on the morning avocations of her entertainer.

At luncheon, plans are generally arranged for the afternoon's amusements.

Luncheon is nearly as important a meal as dinner in the present day. We will, therefore, say something about it here.

People are not taken in to luncheon. The hostess sometimes even leads the way to the dining-room herself, when the butler announces it.

It is always now a substantial and elegant meal. The table should be well covered; cold and hot meat, game, vegetables, tarts, pudding, creams, &c., are all put on it at the same time; and after once handing round the plates of food chosen, the servants leave the room, and the family and guests wait on themselves.

If there are children in the house they dine with their governess at luncheon, and should be trained to behave as little ladies and gentlemen; the little boys acting as small pages, and removing plates, &c.

Music, charades, and other games are frequent evening amusements in country houses.

You should *never* invite yourself to stay with even a near relation. It is a great liberty to do so, and may cause inconvenience to your friend, or give her and yourself the pain of a refusal.

A general invitation should never be acted on. It is often given as a mere act of courtesy; if it was meant, it would be followed up by a special one, sooner or later.

The length of a visit is generally now specified in the invitation. If, however, it is not specified, *a week* is as long as you can properly remain, unless strongly pressed to do so; or unless you should be at the house of a relative or old friend. But long visits are, in a general way, very objectionable, being a great infliction on a family if not desired, and standing in the way of the reception of other guests.

On Making Presents.

There is much courtesy demanded in giving or accepting a present. Do not offer a gift with the assurance that "it is not worth having," or that "you really don't want it yourself." Give it gracefully. Ask your friend to accept "a trifle as a very small token of your regard," &c. &c.

"Nothing is more popular than *small* presents," says Miss Sinclair; and she was right. A valuable gift oppresses the recipient with a sense of obligation; a small gift pleases and obliges at the same time.

You must not be too eager to return a gift. Wait for a time before you do so. The best gifts to offer are elegant curiosities, a book, flowers, or game.

Never refuse a present if you can possibly accept it; it is very discourteous to do so.

Married ladies may receive trifling gifts from single gentlemen, who, being in the habit of visiting much at their house, may consider they are under an obligation for hospitality received which they cannot otherwise return.

MORNING CALLS.

A morning call should not be paid before three P.M., nor after six. No one has a right to intrude (unless by permission) on the quiet morning occupations of a family; nor to detain them in the drawing-room after the dressing-bell has rung.

It is very ill-bred also to call on people at their hours for meals; you should especially avoid making your visit at luncheon time.

A morning call should never exceed a quarter of an hour in time. If other visitors come in during your visit, do not "sit them out," as it is phrased; remain for a few minutes after their entrance chatting to them, if they are acquaintances of your own, or if they are strangers to you, bearing a part in the general conversation. Then rise and take your leave, bowing slightly to the strangers as you quit the room.

Never look at your watch during a morning visit; it is very rude to do so.

Do not call with a large party on your friends; two people are quite as many out of one family as would be proper. You ought not to fill a room up with your own relatives or friends. Never take your pet dog with you on a call. Many persons have a great objection to animals entering their drawing-room, and others have a fear of, or antipathy to them.

You should always leave your umbrella in the hall, and take care that you do not enter the drawing-room with muddy boots.

Children, also, should be left at home when the mamma goes out on a round of visits, unless she is only calling on an old friend.

If the lady on whom you call is not at home, you must leave your card. If she has grown-up daughters or a sister living with her, *two cards;* or you may slightly turn down the corner of your card, which signifies that the visit is paid to all.

It is customary for the names of the daughters who are introduced into society to be printed on the same card as their mother's. It is a saving of expense and trouble, and is in good taste, we think, as implying the protection under which the young ladies visit.

A card left at a farewell visit has P.P.C. (*pour prendre conge—i.e.* to take leave,) written in the corner.

After an illness of any kind, or after the death of any member of the family, a card "returning thanks" is sent to all whose cards or inquiries have been received at the house during the period of affliction.

Visits of condolence are generally paid on friends in affliction soon after the cards of "returning thanks for kind inquiries" have been received.

When morning callers enter your drawing-room you need not advance to receive them beyond a few steps; nor need you lay aside any needle-work or light employment in which you may be engaged; only you must take care that *all* your attention be given, for the time being, to your guests.

You should strive to be pleasant, kindly, and courteous to your visitors, and to let them leave your house with a feeling of satisfaction with themselves and with you.

Take pains to acquire a habit of "small talk" for such occasions, which must not, however, degenerate into gossip; and never let the conversation sink into an awkward silence. Inquiries as to the well-being of your visitor's family or relatives; the public-topics of the day; even "the weather," will always furnish matter for chit-chat without discussing the characters of other people. Nothing is more under-bred than scandal.

It is not necessary to introduce your visitors to each other at a morning call, unless you know they wish to become acquainted. If an ntroduction does take place, you must present the person of *inferior* social position to the superior; the gentleman to the lady; thus (with a slight bow to the lady)—"Will you allow me to introduce Mr. ——?" or, if the person addressed is an intimate friend, and *both* guests quite on an equality, you need only say "Mr. Smith—Mr. Brown," or "Mr. Smith—Mrs. Bell."

When you are yourself introduced to strangers bow slightly, and enter at once into conversation with them; to bow and take no further notice of them, but to continue your conversation with the lady on whom you are calling, is a great want of good breeding.

People who outsit two or three sets of visitors are always considered "bores."

A lady never calls on a gentleman unless professionally or officially. It is considered an impropriety to do so.

Ceremonial visits are made the day after a ball, when it is sufficient to leave a card. It is usual to call about a week after a small party.

When a stranger calls for the first time, you ought to return the call in about a week's time; a long delay in returning a first visit is considered equivalent to an unwillingness to accept the new acquaintance, unless there has been some unavoidable hindrance, which the lady should explain, and for which she must apologize.

Do not, however, apologize for "not having called for a long time," under any other circumstances, or without some perfectly satisfactory excuse; it would be simply a rudeness.

If you cannot receive a visitor, tell your servant to say that you are "engaged," or "not at home." These last words are not, as they are sometimes thought, a falsehood, for every one knows they merely mean that you are engaged and cannot see visitors.

A lady should be more richly dressed for calling on her friends than she requires to be for an ordinary walk.

Introductions and Letters of Introduction.

Never introduce people to each other unless you feel quite sure that it will be agreeable to both parties. We have said before that it is right to introduce the gentleman *to* the lady, even when the social rank of the former is higher, because ladies have always the precedence of gentlemen.

If you are walking with one friend and meet another on the road, you

must not introduce them to each other, unless you know previously that they wish for an introduction.

At a ball the lady of the house may introduce a gentleman to a lady without permission, in order that he may ask her guest to dance.

Ladies are not obliged to consider their ball-partners as acquaintances, unless they please.

It is the lady's place to bow first to a gentleman.

It is no longer necessary to introduce the guests to each other at an evening party. You may talk to any one sitting near you easily and courteously without any introduction. The fact of the lady or gentleman being at your friend's house is a sufficient introduction.

Letters of introduction should only be given to introduce the bearer to a *very* intimate friend of your own. You put yourself under a great obligation to the person whom you request to show civility or kindness to a stranger.

Always reflect whether the person who wishes to be introduced would be agreeable to your friend, and whether you have any right to tax her time and hospitality for another.

Should you have a letter of introduction given to you, be sure *to send it* (inclosing your card). Do not on any account call with it yourself. If the receiver of the letter is really well-bred, she will call upon you or leave her card the next day, and you may then return her visit. She ought to invite you to her house if possible, or to show you any other attention which may be in her power.

If you are yourself the recipient of a letter from a friend presenting a foreigner to you, etiquette demands that you should escort her to any exhibition, whether national or otherwise, which might prove of interest, and make a little party or invite a few friends to dinner, to entertain the stranger. In short, that best and most unfailing guide to good-breeding, "Do unto others as you would they should do unto you," will best direct your conduct.

The letter of introduction is better unsealed. You should request your friend to fasten it previous to delivering it, which is virtually giving her permission to read it first.

Notes of Invitation, etc.

Notes of invitation and reply should be written on small paper of the very best quality. For large parties, balls, &c., people now generally use printed cards.

When a note of invitation to dinner is written, it should be in the third person, and in the names of both the lady and gentleman of the house.

"Mr. and Mrs. —— request the pleasure of Mr. and Mrs. ——'s company at dinner on Monday, Dec. —, at 8 o'clock."

The answer accepting should be—

"Mr. and Mrs. —— have much pleasure in accepting Mrs. ——'s invitation for Dec. —."

Or, refusing the invitation—

"Mr. and Mrs. Moore regret that a previous engagement will prevent them from having the pleasure of accepting Mr. and Mrs. ——'s kind invitation for Dec. —."

Or—

"Mr. and Mrs. Moore regret extremely that owing to a prior engagement they cannot have the pleasure of dining with Mr. and Mrs. —— on Monday, Dec. —."

If there be any other cause for refusal, it should be stated in as few words as possible.

Invitations for balls are sent on printed cards three weeks previous to the day fixed. The card is the usual "At home" card with the word "dancing" printed in the corner; the word "ball" is used only for quite large ones. These invitations, as well as those to "five o'clock teas" and evening parties, are given in the name of the lady only.

We mention this fact, because a lady of our acquaintance tells us that she has known an instance in which some excellent people were vexed, and fancied they had offended the gentleman of the house, because the invitation was sent in the name of the lady only. They asked, "What they had done to offend Mr. ——, as *he* had not *joined* in the invitation to them?"

Never ask a friend, either in a note or by word of mouth, to "*take tea*" with you—it is a vulgarism; you should say "*drink tea*."

Example of a friendly note :—

"Dear Miss A.—

"We have some friends coming to *drink* tea with us to-morrow; will you give us the pleasure of your company also? We hope you will not disappoint us."

In writing to persons of rank above your own, you should "request the honour" instead of "pleasure" of their company.

In writing to a perfect stranger on business of any kind, you should begin your letter with "Sir," or "Madam," and sign yourself "Your obedient servant."

It is usual to write to tradesmen in the third person; as—

"Mrs. —— will thank Mr. Jones to send her five yards of lace, &c., at his earliest convenience."

If writing to a servant, begin with her name, thus—

"Mary Smith,—

"Your character is satisfactory, &c. &c., and you can enter my service on Monday, 18th inst., when my present housemaid leaves.

"Jane Morris."

The signature alone is sufficient to this kind of letter; or you may write in the third person, and say—

"Mrs. Morris is satisfied with Mary Jones's character, and will receive her into her service on Monday, Dec. —."

Thus much for the mere etiquette of letter-writing.

We may add, that to answer a letter promptly is a civility, and in some instances a kindness.

Invitations ought to receive an immediate reply if the card bears R.S.V.P.

If you accept an invitation to dinner, nothing but illness or the death

of friends ought to excuse you from keeping your engagement; as it is very disagreeable for the lady who gives the dinner party to have a vacant seat at the table, and, perhaps, an odd number to send in to dinner. Send an excuse (if one must be made) in time to allow her to supply your place.

THE ETIQUETTE OF WALKING, RIDING, AND DRIVING.

A well-bred woman will endeavour to acquire an elegant walk. She will hold herself erect without stiffness, and walk without a footfall being audible in the house. In the road or street she should also walk lightly.

If you meet a gentleman whom you know slightly, it is *your* place, as a lady, to bow to him first, and thus acknowledge his acquaintance. He is not permitted by the rules of society to bow to you first. If you only just wish to recognise him with ordinary civility, you must bow slightly and distantly, and pass on. But do not, if you are short-sighted, examine him first through your eyeglass before you bow; look at him well *before* you come up to him, and be sure that you know him before you recognise him.

A lady shakes hands with gentlemen who are friends or intimate acquaintance.

A young lady rather gives her own hand than shakes that of a gentleman.

A very young lady should not walk out alone; she should be accompanied by a relative or governess, or attended by a lady's maid. It is now usual for grown-up young ladies to walk without attendance. Ladies and gentlemen never now walk arm-in-arm, unless the lady is elderly or requires support.

At watering-places and public promenades it is usual for gentlemen to join ladies with whom they are acquainted and walk with them for a short time. A gentleman slightly acquainted with a lady raises his hat only slightly.

Now as to riding:

A lady who rides should be dressed in the fashion of the time—but she must not exaggerate it, nor even go to the extreme of it, especially if it is at all fantastic. A lady over or gaily dressed on horseback would look like a circus-rider.

A *too* long riding habit is very dangerous.

A gentleman helps you to mount your horse. You must gather up your habit, and hold it in your left hand; then place yourself as close as possible to the horse, with your face towards the animal's head, and your right hand on the pummel. The gentleman stoops and places his right hand horizontally, at a convenient distance from the ground. Put your left foot in it, and spring upwards into your saddle as he lifts you.

You should not rise much in your seat, nor lean over the horse's neck, nor hold the reins in both hands.

It is much better for a young lady not to ride out alone, with only a groom in attendance, and mothers who permit the violation of this rule of propriety are greatly to blame. We should not have so many disgraceful stories of young ladies running away with and marrying grooms or riding-masters, if they were not improperly left to such low riding associates.

You should imitate the best examples in getting into a carriage. Do not hurry in. If you are going to sit with your face to the horses, and there is one step to the carriage, put your left foot on it—or, if there are *two* steps, put your right foot on the first, and your left on the last step, so as to enter the carriage with your right foot, and sink easily into your seat. If you are going to sit in the back seat, reverse this action, and put your left foot into the carriage first.

The seat facing the horses is the place of honour, and should be given to the eldest ladies, or the first in rank. The lady of the house, however, always occupies her own seat on it, and should never be allowed by a guest to resign it to her. Do not take a stiff-handled parasol, or a large umbrella, in your friend's carriage to scratch the paint. I need scarcely say that you must let your guests precede you in entering your own carriage, as well as in quitting the room, &c.

You may dress rather gaily for a drive.

PRESENTATION AT COURT.

The wives and daughters of the nobility are of course eligible for presentation at Court, unless there is an objection on the part of the Sovereign from some moral cause. Only ladies of good character are received by the excellent Queen of England.

Young ladies of rank, who have violated duty and propriety by a runaway marriage, are not allowed to appear at Court, at least for some length of time afterwards.

Only certain professions are admitted at Court after the nobility and squirearchy.

The wives and daughters of the *Clergy*, of *Naval* and *Military* officers, of *Physicians* and *Barristers*, have a right to presentation at Court. These are aristocratic professions. The wives and daughters of solicitors and general practitioners are *not* entitled to a presentation, nor are the families of tradesmen, though wealth and connexion have proved a passport thither of late years for merchants and manufacturers.

The lady wishing to be presented must ask the favour—and it is a great one—from the friend or relative of highest rank whom she knows. The higher the rank, and the more unexceptional the character, the better for her. The lady who presents must be at the Drawing-room at which her *protégée* appears to be presented. *Any* married lady presented at Court may present a friend in her turn.

The regulations of the Lord Chamberlain must then be consulted and implicitly obeyed.

It is desirable to be early, in order to escape the crowd.

Everything in the shape of a cloak or scarf, even of lace, must be left in the carriage. The train must be carefully folded over the left arm, and the wearer can then enter and wait her turn to be presented.

She is at length ushered to the Presence-Chamber, which is entered by two doors: she goes in to the ante-room or corridor, instantly lets down her train, which is spread out by the officials. The lady then walks forward towards the Queen or Princess. The card

on which her name is inscribed, is handed to another lord in waiting, who reads the name aloud to the Sovereign.

When she arrives just before her Majesty, she should curtsey *as low as possible*, so as almost to kneel.

If the lady presented be a peeress or a peer's daughter, the Queen kisses her on her forehead.

If she is only a commoner, the Queen extends her hand to be kissed by the lady, who having done so, rises, curtseys to the Princess of Wales and the other members of the royal family, and then passes on, keeping her face towards the Queen, and backing out of the door which leads *from* the Presence-Chamber.

Peeresses in their own right—like peers—can demand a private audience of their Sovereign.

DUTIES TO THE POOR.

The House-mother should spare something from her abundance, and even from her poverty, for the poor. In most country houses soup is given away twice a week, and skimmed milk oftener, to the very poor. Where there is an abundant supply of vegetables from the garden, these also should be given to poor people who may chance to have no gardens.

The cook should be charged to save all boilings of meat, ham, tongue, mutton, chickens, &c., and whatever can be spared ; it will help to make soup. Fish-bones will greatly add to it. Scraps of meat left, also should be added and boiled in the digester. The longer it is boiled the better, and it may be set on at odd times. Add one or two pounds of fresh meat, oatmeal, rice, or Scotch barley, with vegetables, and a good soup will be had to give away. A little fresh meat should always be given towards it, and this should not be strained off, but left in pieces in the soup.

Dripping, which supplies the place of butter, is a valuable gift to the poor.

A good large baked rice pudding, made without eggs, a little suet on the top to brown it, makes a good dinner for a family of children.

All spare pieces of bread should be soaked in water till they are soft ; then add sugar, one egg, a little milk and a little spice. Bake it, and it will make a good pudding.

Occasionally give away a few pounds of meat, baked, with vegetables, or made into a substantial pie. The crust can be made of clarified fat. Tea is a welcome gift to an old woman. A pound of treacle for the children would be acceptable.

Old clothes, too, are very valuable gifts, and the charity is enhanced if they are first neatly patched and darned ready for use. A shirt ready- or rather home-made, a knitted pair of stockings, a knitted petticoat, are all gifts of price. A pillow made of paper shavings, elsewhere described ; list cut off flannel makes warm inner jackets, worked nicely together, to be worn inside a cotton dress ; and many little garments may be made for poor children out of odds and ends of linen, cotton cloth, &c. &c.

Subscriptions to clothing-clubs, maternity societies, provident societies, &c., will occur to all ; but much also may be done by visiting personally,

and in a friendly and courteous manner, amongst our poorer neighbours, and giving *just the help* which is required at the time.

"The liberal soul," says the wise man, "shall be made fat;" and doubtless the habit of giving will grow with its exercise, and bring down a double blessing on the giver and the receiver.

We subjoin a capital receipt for a pea-soup, which may be made weekly at a small expense for poor neighbours :—

Peas, 16 oz. ; meat, 16 oz. ; Pot barley, $1\frac{1}{2}$ oz. ; salt, $1\frac{1}{2}$ oz. ; onions, $1\frac{1}{2}$ oz. ; black pepper, 40 grains ; water, 4 quarts.

The peas must be steeped for four hours in 4 pints of cold water. The meat must boil three hours in 5 pints of water. Then boil the peas in a muslin bag and meat together in 5 pints of water for an hour. Next rub the contents of the bag of peas into the soup, but not letting the skins in. Add seasoning of pepper and salt, onions and barley, and boil for an hour. Add water from time to time to make up a gallon.

To Choose Calico.

Rub it to see that there is not much *dress*, as it is called, in it. If a quantity of white powder falls out do not buy it, however cheap, for it is really thin and sleasy, and will not wear well.

To Choose Silks and Satins.

A silk should be soft, smooth on the surface, and brilliant or glossy, not thin, flimsy, or stiff. Stiff silks cut into holes.

The purchaser should carefully *feel* the silk, and gather it into folds. If the folds are round and full the silk is soft, if they are stiff and angular the chances are that the dress will cut in the folds when made up.

Mr. John Spiller has found by recent experiments that hydrochloric acid is a powerful solvent of *silk*, although it has little or no effect on cotton or wool, at least for a long time. The practical use of this discovery to ladies is great. The purchaser of a silk has only *first* to buy or obtain a few inches of it, and drop a little hydrochloric acid—to be had at any chemist's—on the centre of the piece ; if it be of *pure silk* a hole will be made ; if there is cotton in it *those* threads will remain.

FURS, AND SKINS OF BIRDS.

What they are—How to Preserve—How to Clean and Prepare.

The use of furs in England as an article of dress did not become general till the fourteenth century.

In 1670—reign of Charles II.—the Hudson's Bay Company was incorporated by charter, and the entire trade in furs passed into its hands, and furs became cheaper and more abundant. In 1682 an opposition company started, but the two were amalgamated under the original name in 1821. The territory of the Hudson's Bay Company was of great extent: it reached from Canada to the Arctic Ocean, and from the coasts of Labrador to the Pacific. It has recently been transferred to the Government, and may therefore now be said to belong to the nation. London

is the largest fur market in Europe, the Company having nearly 150 establishments in it.

Of all furs in the present day the sable is the most valuable, and will probably always continue the most expensive, as of all kinds of hunting, that of the sable is the most arduous and perilous ; its proper name is *Mustela Zibelline*, or the Sable Marten. It belongs to a group of the *Digitigrade Carnivora* (*i.e.* from *digitus* the toe, *gradion* I walk,—walking on the ends of their toes). The Sable Marten is celebrated for the great beauty of its fur, but its winter coat is the one which is prized, and as it is found only in the northern parts of Europe and Asia, and is most abundant in the mountains of frozen regions, the chase for it is perilous, and the sufferings of its hunters terrible. The exiles of Siberia are employed in this winter sable hunting, and it is said that their sufferings from extreme cold, privations of all kinds, and the attacks of wolves, are beyond anything which we can imagine. A sad price is paid, indeed, for this luxury of the toilet !

The fur of the Hudson's Bay sable (*Mustela Canadensis*) is considered the next best to that of the Russian sable ; the colour, however, is a light brown, not dark like the Russian, but it is frequently dyed, and is then quite as handsome in appearance. The Baum or Pine Marten's skin when dyed cannot be told by unexperienced eyes from the true sable.

The Stone Marten (*Martela saxorum*), found in high and stony

Beech or Stone Marten (*Martes fagorum*, Ray).

districts, is the animal which supplies us with what is called *French* sable, because the French dye its skin so admirably. The natural fur is a bluish white underneath, with a top or surface of dark brown hair; the throat quite white. It is an excellent skin. The Fisher Martin is a larger animal ; the hair of the fur is fuller and longer. Great numbers of these skins are brought to England from North America.

The fur of the Minx resembles sable in colour, but the hair is much

shorter and has a satiny gloss. It is a very durable fur, and is imported by the Hudson's Bay Company.

The Polecats (*Mustela putorius*) are found both in the Old and New Worlds. Their fur is thick and soft, their tail long, and they have glands which secrete a horribly unpleasant fluid. The Polecat is very common in Britain and very mischievous. It hides by day in the thatch of barns and unfrequented places, and at night invades the poultry yards and dove-

Polecats (*M. putorius*, Linn.)

cots, and commits sad havoc, biting off the heads of the sleeping birds and carrying them away. Its fur is known to us as Fitch, and is still used, though not much liked, in England. The top hair is black, the ground fur a deep yellow. Fitch wears well, but has always an unpleasant smell about it.

The Ermine is another species of Polecat. Its body is about nine inches long and its tail about four. It has two coats—a white one in winter, with its tail tipped with black—this is the beautiful fur we call ermine. In the summer its coat changes to a beautiful brown above and yellowish beneath; it is then called Roselet. It is found in the northern parts of the New and Old continents. The best fur is taken from full-grown animals. They are taken generally in traps or snares, so that the skin may not be stained. The tails are laid on the pure white skin when the furs are prepared for use. *Miniver*, famous in Troubadour lay and story, is the ermine skin with the black tips of the tail spotted at intervals over the skin. Ermine was once exclusively worn by sovereigns and royal persons, and is still worn with state robes.

The Kolinski (*Mustela Sibirica*) furnishes the Tartar Sable, as it is called; the skin is naturally of a bright yellow colour. It is, however,

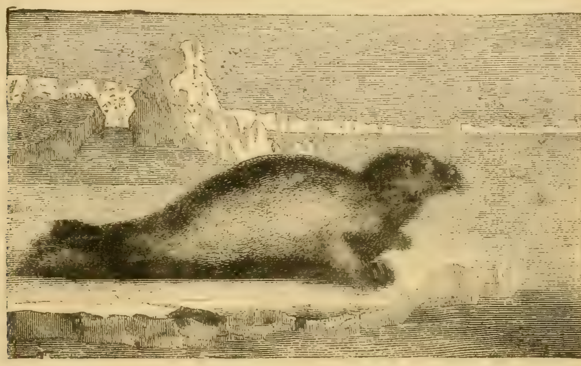
dyed into a good imitation of sable. The tail of the Kolinski furnishes the "sable" pencils of artists.

Ermines (*M. erminea*, Linn.)

The Beaver (*Castor Fibor*) is distinguished from all other Rodents, by its tail, which is horizontally flattened, of a nearly oval form, and covered with scales.

This animal was once, it is believed, a native of Britain. It is now an inhabitant of the most solitary parts of North America; it is also found in Siberia and Norway. It is a wonderfully ingenious animal, and builds for itself a hut (which it inhabits in winter) with marvellous skill. It is always found near the banks of rivers or lakes, and in company with others. Beavers aid each other to construct dams or dykes and huts for the winter. Each hut contains two or three families, and is of two stories. We have not space to give a full account of these wonderful dwellings or their inmates, but they are worth reading about. Formerly the skins of beavers were in great demand for hats, but happily for their existence the fashion has gone out, or they might have shared the threatened extinction of the black monkeys. The skin is still used for other purposes. When it is well prepared it nearly equals seal skin, and is lighter and more lasting. It is probably often worn as seal skin, if not sold for it. Beaver and rabbit skins are manufactured into felt.

The seal (*Phoca*), the skin of which is now so much worn by English ladies, is an amphibious creature, found in the Arctic and South Seas.



The Seal.

Its natural history is as interesting as that of the beaver, but we have no space for it here. The coarse hair of the seal covers a fine silky fur.

The Crested Grebe (*Podiceps cristatus*).

The skin takes a great deal of preparation before it is fit for use, and is dyed dark brown or black. It is very beautiful and very expensive.

Of the fox—red, blue, black, and silver—and of the brown and grizzly bears, we need say nothing. The squirrel also furnishes us with a delicate fur, light, warm, and lasting, and imitation sable is made from it dyed.

The chinchilla is a little animal between a squirrel and a rabbit. Its fur is very soft and beautiful, but it is not durable, and soon loses its lovely bloom. Its fur is brought from Lima, Buenos Ayres, and Arica. The darkest and best comes from Arica. Those of Lima have short hair and are inferior to the others.

The Canada lynx (*Felis Canadensis*) has soft long fur of a greyish colour. The Norway lynx is spotted with brown. It is generally dyed black and makes pretty muffs, but is not much worn at present.

The Astrakan, much used now for muffs, jackets, and trimmings, comes from Russia.

But perhaps the most beautiful of all muffs and trimmings are those made from the grebe, an aquatic bird, rarely seen on the land, as it has great difficulty in walking. It dives very swiftly, and is so beautiful that it is considered the standard of perfection among water birds. The extraordinary beauty of its plumage has caused the skin of this bird to be greatly used in ladies' dress. Seal skin and grebe are occasionally united with good effect in muffs, etc., etc.

To Preserve Skins of Birds for Hats.

After the bird has been carefully skinned, the skin should be nailed out on a board with the feathers downwards, and having been well peppered, should be rubbed with a strong solution of alum and left on the board till quite dry. It must be placed in the air when drying.

Furs require the greatest care. They have especially to be guarded from damp and moth. Wet or damp spoils fur, especially chinchilla. The moment the wearer of fur enters the house after a damp or wet walk she should wipe her fur carefully with a very clean cloth, and then dry it at a little distance from the fire. It will decay if it is put away damp.

Before putting furs away for the summer shake and wipe them well, (but do not shake chinchilla; it will not bear it; it is so fragile), sew them up in linen with small bags of pepper with them, or *pepper the fur*—it will shake out afterwards. Cedar shavings put in with the fur are also a good defence against moth. Wrap the linen envelope in another of coarse brown paper. Carefully wipe out the box or drawer in which you place the furs, and take care that it is not a damp place in which you leave them. Furs should be examined several times during the summer to be sure no moth has got in. They should be put away also before moths are about.

Fur may be cleaned by rubbing dark furs with clean dry bran, and ermine with powdered starch till it is white—but both cleanings make a great mess in the house, and never answer so well as sending the furs to a good furrier. Grebe is cleaned by washing it well with a soft sponge and hot soap and water; then again with warm water only. Brush down with a *clean* clothes brush.

CLEANLINESS.

THE HOUSE-MOTHER.

"It is often said that there are few good servants now : I say there are few good mistresses now . . . . mistresses now seem to think the house is in charge of itself. They neither know how to give orders, nor how to teach their servants to obey orders—*i.e.*, to obey intelligently, which is the real meaning of all discipline."—*Notes on Nursing.*

OUR motto is taken from Miss Nightingale's "Notes on Nursing," and is only too true.

It is amazing how little the house-mother of to-day (in many instances) looks after her house.

Housekeeping is scarcely the shadow of what it was a century ago, and the change is surely very much to be regretted. There would be far less craving for excitement, whether of pleasure or "a mission,"—far less invalidism and necessity for wine and tonics, if our ladies would return to the good old ways (when they *were* good) and exercise their true and undenied rights in household rule and dainty ways at home.

In one especial respect the change has been greatly for the worse.

In former days the ladies of England looked more to the house cleaning than they do at present. The consequence was that they were stronger, brighter, more vigorous, than they are at present.

We look back to our own grandmother, and remember a stately old lady of ninety-five! with skin still of a creamy white, few wrinkles, several *white* teeth remaining, able to walk, read, and work as well as she could at forty years of age. She never, till the close of her life, indulged in any modern luxury. She was a perfect housekeeper. In her youth she told us she had been made for the sake of exercise to *rub* tables and shake feather beds before she went into the school-room ; a portion of each day, too, was given to household duties. Now what is it? Numbers of women, who are well enough off to keep two servants, hardly ever walk over their house *entirely at the same time.* They go into the kitchen, look in the larder, order dinner, and remark on it if it is badly cooked, comment probably on any palpable housemaid's neglect, and find fault with her for it ; but they do not visit every hole and corner as they ought every day or every other day (unless some duty prevents it), and see that windows are open, dust removed, china utensils washed and sweet, *especially* that basins are not wiped with a nasty cloth which leaves the odour of its recent presence ; that saucepans are clean, drains in order, closets kept clean and sweet ; yet these are absolute *duties* to be fulfilled, for on perfect cleanliness depends the health of the entire family, especially of the children. Perfect cleanliness and pure air are antidotes to scarlet fever, smallpox, measles, and low typhoid or even typhus fever.

The house-mother who every day takes this beneficent round is acting as the wise guardian of the lives, health, and intellects of those who look to her for protection; such a thought should render the vigilance required a delightful rather than a burdensome task.

She should see especially that the beds are not made up unaired. Many housemaids, especially if they have a great deal of work to do, are anxious to get the bedrooms "done" early; so they strip the beds and cover them *at once*, shutting up the damp and unwholesome exhalations of the sleeper's body in store for his benefit the next night. Now this ought *never* to be. She should see that the beds are opened and remain so for some time; that the windows are open near them; that the mattresses are rolled back for the air to dry them underneath; that the blankets and sheets are placed in the air; that the bedstead is DUSTED; the bed curtains (if there are any) shaken well out and lifted on the bed while a slightly damp cloth wipes the carpet beneath it. She should require the housemaid never to forget her box for cinders, &c., in the winter; and she should see occasionally if that and the slop-pail is kept clean. The latter should be washed out twice a week with chloride of lime and water. Personal observation, the quick eye of the mistress (which a little pains will render wonderfully observant) will have a very stimulating effect on the housemaid. The lady should never fail *to praise* cleanliness and care in small matters. Self-esteem, once awakened, will do much to cause a girl to exert herself; *very much more* than blame, which discourages and depresses. There is nothing like *sympathy* in influencing people. Let the house-mother show that she takes a real interest in her servants' work, and it will become a labour of love on their part.

"Attend," says a wise French writer, "as much to neatness as you do to economy. Accustom girls never to suffer anything about them to be unclean or in disorder; lead them to notice the slightest derangement in a house; say to them that nothing contributes more to economy and neatness than keeping things in their proper place. This may seem trifling, yet it leads to very important consequences; for then, when anything is wanted, there will be no difficulty in finding it; and when it is done with, it will be returned to the place from which it was taken. This exact order forms the most essential part of neatness. For instance, a dish will not be soiled or broken if it is put in its proper place as soon as it has been used. The carefulness which makes us place things in order, makes us keep them clean. Joined to all these advantages is that of giving to domestics a habit of neatness and activity, by obliging them to place things in order, and keep them clean."

Dust is one of the greatest enemies of domestic comfort, and a sad destroyer of furniture. We are bound to wage continual war with it; not only on this account. It is inhaled into the lungs, and becomes one of the sources of disease. Miss Nightingale says with great truth, "No particle of dust is ever or can ever be removed or really got rid of by the present system of dusting. Dusting in these days means nothing but flapping the dust from one part of a room on to another with doors and windows closed. What you do it for I cannot think. You had much better leave the dust alone, if you are not going to take it away altogether." A *damp*, but not wet, duster will alone remove without scattering

it; and a friend of ours of great experience, and whose house is a perfect picture of cleanliness, worthy of Holland itself, asserts that she rarely has her carpets swept. They are wiped over with a damp (but only moist, not wet) duster. Thus the carpets are preserved from the wear of the brush, and the dust is not scattered over curtains and furniture.

Again we quote from the wisest of women:—

"Air can be soiled just like water. If you blow into water you will soil it with the animal matter from your breath. So it is with air. Air is always soiled in a room where walls and carpets are saturated with animal exhalations.

"Want of cleanliness, then, in rooms . . . . may arise in three ways.

"1. Dirty air coming in from without, soiled by sewer emanations, the evaporation from dirty streets, smoke, bits of unburnt fuel, bits of straw, bits of horse dung.

"If people would but cover the outside walls of their houses with plain or encaustic tiles, what an incalculable improvement would there be in light, cleanliness, dryness, warmth, and consequently economy. The play of a fire-engine would then effectually wash the outside of a house. This kind of *walling* would stand next to paving in improving the health of towns.

"2. Dirty air coming from within, from dust, which you often displace, but never remove. And if you never clean your furniture properly, how can your rooms be anything but musty? Ventilate as you please, the rooms will never be sweet. Besides this, there is a constant *degradation*, as it is called, taking place from everything except polished or glazed articles—*e.g.*, in colouring certain green papers arsenic is used. Now in the very dust even, which is lying about in rooms hung with this kind of green paper, arsenic has been distinctly detected. You see your dust is anything but harmless; yet you will let such dust lie about your ledges for months, your rooms for ever."

The house should be *thoroughly* cleaned from garret to cellar once every year; the ceilings, if dirty, whitewashed, or papered (the latter mode is good, and the effect, especially when the paper covers a *cracked* ceiling, excellent, and it is as cheap as whitewashing, and can be done without injuring the wall papers), and the papers cleaned with bread.

Papers which are glazed clean best, and are therefore cheaper in the end than unglazed papers. We give receipts for cleaning every article of household use in the following pages:—

To Test the Purity of the Atmosphere.

Fill a glass tumbler with lime water, and place it in any convenient position. The rapidity with which a pellicle forms on its surface corresponds to the amount of carbonic acid, or foul air, present in the atmosphere that surrounds it.

To Clean Wall Papers.

Let the servant or man employed get on high steps, and first brush the wall all over with a *perfectly* clean brush. Then divide a stale loaf in large pieces, and rub the paper downwards with it in firm clear strokes; he must not go back over it with the same piece of bread, nor rub it up and down, only downwards. The bread will remove all the dirt and leave the paper like new; but it must not be used dirty, a fresh piece

must be taken when the last used is soiled, otherwise dust will be carried from one breadth of the paper to the next.

To Remove Grease Spots.

If there are any grease spots on the paper, cover them with a little moist fuller's earth, and when it is dry brush it off. Repeat the application if required.

To Clean Paint.

This receipt is given in an American publication.

Get some of the best whiting; powder it and then *sift it*, so that it may be as fine as possible. Put it in a plate for use. Get some clean warm water in a basin, and a piece of *soft* flannel, and a new soft chamois leather.

Dip the flannel in the water and squeeze it nearly dry; then rub it down in the whiting, and take up as much as will adhere to it. Rub the paint gently with it and it will clean it perfectly. Next lightly wash the part done with clean water, and dry with the chamois leather. The paint will look as well as if it were just done, and the most delicate colours will be uninjured. It is a better mode than the old one of soap and water, and it is also quicker about.

Window-cleaning should be done by men, if the windows are high up. No woman should be allowed to run the risk of breaking her neck from a height, nor to stand where she is indelicately exposed to observation, but she ought to clean the *inside* of the windows with the footman or hired cleaner.

Plate-glass is best cleaned with wet whiting, which is afterwards washed off, and the glass is rubbed with a chamois leather.

If paint-splashes have been left on the panes of glass by the painter, it can be removed by washing the glass with soda and water, which will quite clear it from them.

Board Cleaning.

Boards should never be rubbed *across*, but up and down the boards. After being well scrubbed with soap, hot water, and a brush, they should be washed over again with clean water and soft cloth, and then well dried by hard rubbing. To extract oil from boards (it is frequently upset on them by careless painters), make a lye of pearl-ashes and rain-water; add to it unslacked lime as much as the water will absorb; stir well together; let it settle, and bottle it for use. Dilute it with rain-water when required, and wash the greasy spots quickly with it. Do not let it remain wet, for fear of discolouring the boards. Boards may be whitened by scrubbing them with soft water, sand, and slacked lime. This will also destroy insects.

How to Clean Carpets.

Carpets should be swept *the way of the pile*, with wet tea-leaves, to prevent the dust from flying over the curtains and furniture. A short-handled soft brush should be used for valuable carpets, and the servant must sweep it *with care* once a week. Once a year carpets should be well shaken. For cleaning them when they are laid down, we recommend a wash called Proctor's Carpet Renovator. It must be used as follows:—

Let the article be well shaken and freed from dust; then with a flannel and hot water wet the part to be cleaned; rub on the renovator, and again use the flannel and hot water, then rub dry with a towel.

Carpets should be shaken, and put down as for use, and a small portion done at a time.

Sold in tablets at 6*d.* each, or 5*s.* 6*d.* per dozen.

It is also used for cleaning and restoring the colours of carpets, druggets, woollen materials, moreens, damasks, silks, etc., rendering them equal to new with very little trouble or expense.

Bedroom carpets should be wiped over, *especially under the bed*, with a damp cloth every day, or at least three times a week.

The house-wife who has her carpets wiped with a damp cloth daily (if mud be on them, the spots must first be brushed off), will find that it is only necessary to sweep them once a week, and that they will last for years longer than if they were swept daily. Of course the cloth must not be wet, only damp enough to pick up flue and dust. But *however* it is cleaned, be sure that it is done often and effectually, for the sake of health.

"A dirty carpet," says Miss Nightingale, "literally infects the room. And if you consider the enormous quantity of organic matter from the feet of people coming in, which must saturate it, this is by no means surprising.

"As to floors, the only really clean floor I know is the Berlin *lackered* floor, which is wet rubbed and dry rubbed every morning to remove the dust. The French *parquet* is always more or less dusty, although infinitely superior in point of cleanliness and healthiness to our absorbent floor."

Polished floors, well varnished, with a mere strip of carpet by the side of the bed (in bedrooms), is better and healthier than our present carpeted rooms.

For Removing Grease from Carpets.

Half a wineglassful of Fuller's earth, half a wineglassful of magnesia. Mix the above in a basin with boiling water; put it *hot* on the grease-spot or spots, and leave it on till it is dry, then brush it off, and you will find the spots are gone. Or if the grease is recent, lay a sheet of blotting-paper over it and iron over the spot with a hot flat iron; it will come out into the blotting-paper, but you must keep moving the paper and applying fresh parts of it till the heat has absorbed the whole of the grease.

To Remove Ink from Carpets.

If the ink is just spilled, take up as much as you can with a spoon and with blotting-paper. When you have taken off all that is possible, wash well with skim milk (London milk does as it is), then wash again with hot water. As soon as the accident happens, wet the place with juice of sorrel, or lemon, or vinegar, and the best hard white soap. Old ink-stains are hard to get out; but they can be removed by first wetting the spot, and then applying salts of sorrel. Wash off immediately, however.

Fuller's earth mixed with lemon-juice will also take other stains out of carpets.

Carpets should not be swept with the whisk-brush above once a week. It wears them out if it is used oftener.

To Clean Floor Cloths.

Sweep them, and wash them now and then with milk; never scour them with a brush, or use soap or hot water to them, as it would take off the paint. A soft cloth and lukewarm water are all that is required to clean them.

Oil-cloths are washed when they require it with a soft flannel wetted with milk; or with a mixture of salad-oil and weak table beer. Never use soda or soap to them.

To Clean Greasy Cocoa-nut Matting.

Thoroughly scrub it all over with hot water and soap, then loosely fold it and put it into a large washing-tub. Pour a quantity of cold water over it, then hang it out on a line in the sun to dry.

To Clean Straw Matting.

Wash as seldom as possible; but when it becomes imperatively necessary to do so, use *salt* and water. Salt will prevent the matting from turning yellow. Dry as fast as you wash, and wash only a small space at a time.

Stained boards are dusted and polished as stained furniture would be.

To Clean Glass.

Tumblers and wine-glasses should be washed in *cold* water in which a little soda is dissolved, then turned up to drain, dried with a soft, clean, and *dry* cloth, and finally polished with a leather or an old silk handkerchief. Chandelier or lustre glasses are washed in the same way. Decanters require careful cleaning. First have ready some strong suds of white soap and water and a little pearl-ash. Mash up an egg-shell well, drop it into the bottle, pour in some of the soap-suds, and shake it well about till the bottle is clean, then empty it; put in fresh suds and clean inside with a small sponge on the end of a glass-stick; rinse out twice with clean cold water. Next put them into the soap suds, and if they are cut, wash them with a regular glass-brush; next rinse the outside. Dry the inside with a small clean piece of linen on the end of your glass-stick. Wipe the outside with a dry glass-cloth, and polish off with a leather or silk handkerchief.

For cleaning and mending china, *see* "China Closet."

To Remove Rust.

To remove rust from steel, cover with sweet oil, well rubbed on it; in forty-eight hours use unslacked lime powdered very fine. Rub it till the rust disappears. To prevent the rust, mix with fat oil varnish four-fifths of well-rectified spirits of turpentine. The varnish is to be applied by means of a sponge; and articles varnished in this manner will retain their brilliancy, and never contract any spots of rust. It may be applied to copper, philosophical instruments, etc.

To Distinguish Iron from Steel.

Let a drop of diluted nitric acid fall on the metal, and after a few minutes wash it off with water. If the metal be steel, a black spot will be left on it; if it be iron, a whitish-grey spot will remain. The reason is, that the nitric acid dissolves the iron in both cases, but the charcoal that enters into the composition of the steel remains undissolved, and constitutes the blackness.

To Clean Marble.

One oz. of potash, 2 oz. of whitening, and a square of yellow soap, cut into small pieces; boil all together in a saucepan, until it begins to thicken; apply this with a large brush to the marble. If the marble is very dirty, let it remain on all night; if not, one hour will be sufficient. Then wash it carefully off with plenty of cold water and a sponge. Take care the mixture is not applied too hot. Or:—

Equal quantities of soft soap and pearlash.

Put the soap and pearlash on the chimney-piece with a soft flannel; let it lie on it for a few minutes. Wash it off with warm water, not too hot; wash it over a second time with cold spring water. Acids act

on marble. Marble is itself composed of carbonate of lime—that is, it is a compound of carbonic acid and lime. Now the carbonic acid has a comparatively weak affinity for lime, and most other acids will prevail over it and take its place when brought into contact with it; thus destroying the texture of the stone, liberating the carbonic acid, and leaving some salt of lime, in the form of a white powder, in its place.

When marble has had its polished surface eroded by acids—and even lemon juice or vinegar will do this readily—the only mode of reparation is to have the marble again polished by the use of polishing powders, such as emery.

Neither spirits nor water produce any permanent effect on marble, but fixed oils and grease soak into its substance, and it is impossible to remove them, as any agent potent enough to act on the grease will also destroy the texture of the marble. A portion of the grease may be extracted by covering with fuller's earth or pipeclay. But marble should be carefully preserved from contact with grease or oil.

Alabaster is so called from Alabastron, the name of a small town in Upper Egypt, near which the stone was very abundant. There are two kinds of alabaster, one a white semi-transparent *sulphate* of lime, and the other a compact crystalline *carbonate* of lime. The former is the real alabaster, and is so soft that it may be scratched with the nail, while the latter is quite hard and effervesces in acid.

Alabaster must not be cleaned with soap and water. It is cleaned by rubbing it with lemon-juice by the Italian manufacturers of it.

To Clean Brass.

Rub it with a little sal ammoniac finely powdered and wet. Warm the brass first; polish with wash leather. Or:—

Rub with a soft wash-leather dipped in sweet oil; then with finely powdered rotten-stone. Polish with wash-leather. The Americans use powdered rotten-stone, well mixed with a pint of water. Then a teaspoonful of sulphuric acid is added. This mixture is applied gently, then rubbed off, and the brass polished with powdered whiting which has been sifted through muslin. Use wash-leather in all cases. Some persons wash the brass with the sulphuric acid and water, and then polish with rotten stone, etc., etc.

To Clean Ormolu Ornaments.

The best way to clean ormolu ornaments is to rub whiting, moistened with gin, well on the articles with an old toothbrush. Rub it off with a clean one, and polish with a leather.

To Clean Real Bronze.

Wash the ornaments gently (with a sponge) with soap and water, then rinse them in beer. Do not wipe it off or rub the ornaments at all, but place them in a warm room, at a little distance from the fire, until they are quite dry. Use very little soap.

Bronzed chandeliers, lamps, etc., should be only dusted with a feather brush or soft cloth. Washing takes off the bronzing.

To Clean Gilt Lamp and Chandeliers.

Wipe off the dust with a soft cloth, and wash gently with fine soap-suds and soft *lukewarm* water. Any wrought work may be *carefully* cleaned out with a very soft toothbrush.

To Clean Steel and Iron.

One ounce of soft soap, two ounces of emery, made into a paste; then rub the article for cleaning with wash-leather, and it will give a brilliant polish.

For Removing Paint from Wood.

Mix 1lb. of soda, such as is used for washing; 2lbs. of lime, unslacked. If the paint is very strong on the wood, add ½lb. of potash.

Mix these ingredients together, and dilute with water until the mixture becomes rather thicker than whitewash, and then rub it on the paint with a piece of wood folded up in rag. The person who uses this preparation must be careful not to touch it with his hand.

To Clean Japanned Waiters, Urns, etc.

Rub on with a sponge a little white soap and some lukewarm water, and wash the waiter or urn quite clean. Never use hot water, as it will cause the japan to scale off. Having wiped it dry, sprinkle a little flour over it; let it rest a while, and then rub it with a soft dry cloth, and finish with a silk handkerchief. If there are white heat marks on the waiters, they will be difficult to remove. But you may try rubbing them with a flannel dipped in sweet oil, and afterwards in spirits of wine. Waiters and other articles of *papier maché* should be washed with a sponge and cold water, without soap, dredged with flour while damp; and after a while wiped off, and then polished with a silk handkerchief.

Wood Furniture.

The greatest care should be taken to keep furniture fresh and clean. If the house-wife is neat and careful her property will last much longer than otherwise, and her dwelling will always possess a charm too often wanting in more pretentious dwellings.

Furniture which is French polished should be carefully dusted every day, and polished once a week with the furniture polish to be bought at any good chemist's. Generally these polishes are better and really cheaper than any that the housekeeper can make herself. "The chemical and mechanical action of different substances on articles of furniture is very little understood by persons in general, and consequently the most absurd directions are frequently issued for the preparation of cleaning materials, and also for preventing injury from certain agents. The substances from which furniture is chiefly exposed to injury are water, oils, spirits of various kinds, such as brandy, eau-de-Cologne, benzine, etc., and acids.

Varnishes, or polished surfaces of wood are easily injured by volatile mineral spirits, such as those used for lamps, or by any alcoholic spirit, as brandy, or wine. The polish is composed of gums and resins which are soluble in spirits. Many of these polishes or varnishes are made by dissolving the materials in alcohol, then when they are applied the spirit evaporates and the gum or resin is left in a thin polish or varnish on the wood. Of course, if wine, brandy, or spirits of wine fall on it, a portion of it is again dissolved, and the brilliancy of the surface is destroyed. The only remedy for these kinds of stains or marks is to have the table, or whatever it may be, repolished.

Heat has the same effect on French polish. A hot plate, or dish, or cup, or mug, placed on it, leaves its shape as a dull mark on the table. Therefore, dining tables are better *not* French polished, but well rubbed with oil. When furniture is

not French polished, it is well to rub it with linseed oil, slightly coloured with alkanet root. Every time the dinner table is rubbed all the leaves should be put in, so that the portions of the table may be of the same colour, for oil darkens mahogany, and if the leaves are not rubbed every time there will soon be a great difference of shade between them and the table.

A Capital Receipt for Polishing Tables.

Cold-drawn linseed oil, 1 pint; spirits of wine, 1 oz.; white tonic vinegar, 1 pint; spirits of turpentine, 1 oz.; powdered gum arabic, ½ oz.; butter of antimony, 1½ oz.; spirits of salt, 1 oz.

The above ingredients to be well mixed together and shaken previous to being used.

Family Receipt for Polish for Furniture not French Polished.

Three oz. of bees' wax; 3 oz. of hard white soap; 1 oz. of spermaceti, cut up small and simmered in a pint of water, keeping it stirred all the time. Pour it into a jar and keep it well covered.

We give the following excellent receipt, which proves experimentally to be good for those who may wish to polish a table or box for themselves, premising that the surface to which it is applied must be perfectly cleansed first :—

French Polish.

Shellac, one ounce and a half; mastic, half an ounce; sandarac, half an ounce; rectified spirits of wine, two ounces. Pound the gums very finely in a mortar, and put them in a bottle which will rather more than hold the whole quantity; stand the bottle in a kettle of cold water, which bring slowly to a boil; let it boil for some time, until the contents of the bottle become like treacle (this requires great care), stirring the while with a wire rod. Roll several yards of flannel list into a flat coil, put a little sweet oil on it, and cover with a piece of old linen; on this apply the polish.—*The Field.*

Furniture Polish.

Half a pint of spirits of wine; ½ oz. of gum shellac; ½ oz. of gum benzoin; ½ oz. of gum sandarac.

Put the whole into a bottle for a day or two, and shake it a few times. When the gums are dissolved it is fit for use. When you think the polish is laid on thick enough, take a clean wad and cloth, put a little clean spirits of wine on the wad, the same as you did the polish, and rub it up the same way, but rub very lightly, and rub until quite dry. You must put a little oil on the cloth the same as in laying on the polish.

For Polishing Furniture.

Half a pint of vinegar; half a pint of linseed oil; two pennyworth of butter of antimony.

To Clean the Face of Soft Mahogany or other Wood.

After scraping and sand-papering in the usual manner, take a sponge and well wet the surface to raise the grain; then with a piece of fine pumice-stone, free from stony particles, rub the way of the fibres; rub the wood in the direction of the grain, keeping it moist with water; let the wood dry then; if you wet it again you will find the grain much smoother, and it will not rise so much; repeat the process, and you will find the surface perfectly smooth, and the texture of the wood much hardened. By this means common soft Honduras mahogany will have

a face equal to Hispaniola. If this does not succeed to your satisfaction, you may improve the surface by using the pumice-stone with cold-drawn linseed oil, in the same manner as you proceeded with water; this will be found to put a most beautiful, as well as durable, face to the wood, which must then be polished or varnished.

To Clean and Lay by Curtains.

In summer it is usual to lay by curtains of rep, damask, or chintz, and replace them with lace or muslin curtains, which look much cooler, and the more expensive rep and chintz are preserved by it. Rep curtains should be well brushed and shaken; wrapped in linen cloths, and put away (protected by bags of pepper, cedar shavings, or camphor, from the chance of moths) in a dry closet or a deep drawer. Chintz should be spread on a long table and rubbed all over with clean bran and flannel, which cleans the glaze nicely. Then fold and lay them by. If chintz curtains have the dust blown off them once a week by a pair of bellows, and are taken down and well shaken once a quarter, they will last seven years without requiring cleaning. The writer speaks from experience in this matter. It is wiser to have lace and muslin curtains cleaned than washed, and quite as cheap. Chintz should also be sent to be cleaned and re-glazed when dirty.

To Clean Covers which are not Silver.

Put a piece of mottled soap (about 2 oz.) and about the same quantity of whiting into a jug and pour boiling water on it; mix till it becomes a thick paste, *quite* smooth. Then rub it on the covers, let it dry, and rub off with dry whiting and a leather. This preserves the covers from being scratched. The insides and outsides of covers should be carefully wiped the moment they are brought from the table.

There are also pastes sold for cleaning covers, about the best of which is Graham's paste; but the old fashioned mode of using soap and whiting for the purpose does very well and preserves the covers longer.

When they are plated, they are best cleaned like other plate, with gin and whiting mixed or with *rouge* powder.

To Clean Tins.

Clean tins as you would clean covers, with soap and whiting mixed to a cream in boiling water. Lay it on with a piece of leather; let it dry, and then rub it off with dry whiting and a clean leather.

To Clean Copper and Brass.

Mix oil and brickdust, or oil and finely powdered rotten-stone (sifted through muslin) together; rub it on with a piece of leather; let it rest a little on, and then rub off with a dry soft leather.

Many people use oil of turpentine and rotten-stone, but the copper very soon tarnishes after its use; others use oxalic acid, but this is so dangerous a poison, and so painful if it chances to get into the servant's eyes, that we strongly object to its use.

To Clean Lacquered Brass.

Wash with a stiff lather of soap and water; let the brass lie in it for three days, taking it out every day and brushing it with a hard brush; let it dry, and then rub it with a eather.

To Clean Stair-rods.

Mix finely-powdered rotten-stone and sweet oil to a paste, then rub it

1. Boars Head.
2. Wassail Bowl.
3. Punch Bowl.
4. Roast Swan.
5. Punch Jelly.
6. Lambs Wool.
7. Truffles.

on each rod with a piece of flannel or woollen. Polish with the dry powder of the rotten-stone and a nice leather.

The same mixture, carefully applied to inlaid brass or brass handles of furniture, answers very well; but care must be taken not to let it lodge in any network or hollows of the brass.

To Clean Candlesticks.

Melt all the wax or grease off with boiling water; but on no account melt it by putting the candlesticks before the fire, as it melts the solder. Tin candlesticks must be cleaned as other tins are. Plated candlesticks should be cleaned with plate-powder.

To Clean the Inside of Pots, Pans, and Kettles.

Boil in the kettle or pot a little sal-ammoniac for the space of one hour, to remove the fur. Be sure to wash out a dirty saucepan with boiling water the moment you finish using it.

To Clean Steel or Iron.

Make a paste of two ounces of soft soap and four of emery-powder — that is, two ounces of coarse emery-powder and two of fine. Put this paste on fire-irons, fenders, etc., and afterwards rub off with dry wash-leather. Some people use crocus-powder moistened with sweet oil. This is best for polished steel.

To take Rust out of Steel.

The steel must be covered with sweet oil, and left for 48 hours, then rubbed with leather, and this must be repeated till the rust is removed.

Or you may rub it with the finest emery-paper.

To Clean Cast Iron and Black Hearths.

Mix together blacklead and whites of eggs to a liquid consistency; paint the stove, etc., all over with it, and rub bright with a hard brush.*

To Clean Looking-Glasses.

Wash them with spirits of wine; dry them; powder slightly with whiting, and rub off with a leather. Take care that the whiting does not get into the edge of the frame.

Polish the mahogany frames with furniture paste. Beware of spilling scents on polished looking-glass frames, as it removes the polish.

To Clean Plate.

Plate should be treated with great care. Never put it into a basket or tray with knives, nor mix spoons with forks, for fear of making scratches, which nothing will remove. Wash it directly it comes from table with warm water and soap, rinse it in cold water, wipe it, rub it well with a leather. Never suffer mercurial preparations to be used for silver. It is a really saving plan to boil it for half an hour in soft water, with whiting and yellow soap enough to make a lather. Rinse it with cold water, wipe with a soft towel, and rub with a leather.

Gas blackens silver sadly, and the deep stain can only be removed by a plate-powder. Rouge (which is made by the precipitation of sulphate

---

* A most excellent varnish to prevent rust is made of one pint of fat oil varnish, mixed with five pints of highly rectified spirits of turpentine, rubbed on the iron or steel with a sponge. This varnish may be applied to bright stoves, and even mathematical instruments, without hurting their delicate polish.—Dr. Brewer's "Guide to Science," p. 260.

of iron by carbonate of potash) is most generally used, and does very well. In our own household the plate is cleaned by being first nicely washed in warm water and wiped dry. Then a mixture is made with whiting and gin, or spirits of wine (which is in many respects better), and it is rubbed wet on the silver. A sponge is used to rub this mixture on, as it is soft. It is let dry *very* thoroughly, so that it will rub off like powder with a piece of flannel; *then* it is polished with a chamois leather. Be sure that the whiting is reduced to the finest possible powder. It should be ground quite fine and even, then sifted through coarse book-muslin, as any rough bits will scratch.

To take Stains out of Silver.

Steep the plate in soap, let it lie for four hours, then cover it with whiting wet with vinegar, so that it may stick upon the silver, and dry it by the fire; after which rub off the whiting, rub it over with dry bran, and the spots will disappear, and the plate look bright.

To Remove Ink Stains from Silver.

The tops and other portions of silver ink-stands frequently become deeply discoloured with ink, which is difficult to remove by ordinary means. It may, however, be completely eradicated by making a little chloride of lime into a paste with water, and rubbing it upon the stains.

An Old Family Receipt to make Plate look like New.

Take of unslaked lime and alum a pound each, of aqua vitæ and vinegar each a pint, and of beer-grounds two quarts; boil the plate in these ingredients, and it will receive a beautiful polish from them.

Plate is best polished by the naked hand, but the operation gives some pain to the rubber. Jewellers thus polish plate, but it requires the thick-skinned, yet soft, palm of a practised hand to do it.

Egg-spoons get discoloured and tarnished by the sulphur in the egg uniting with the silver as soon as it is moistened by saliva. This tarnish is a sulphuret of silver, and may easily be removed by rubbing it with table salt or a little hartshorn.

Let the plate in use be counted over every night—a card with a list being kept in the plate-basket—and the basket carried to the master's or lady's room.

To Clean Britannia Metal.

Finely powdered whiting, two table-spoonfuls of sweet oil, and a little yellow soap melted to some thickness: mix, with a little spirits of wine. Rub this cream on with a sponge or soft flannel, wipe it off with a soft cloth, and polish with a leather.

To Clean a Metal Teapot.

Put into it a solution of common soda boiling hot; let it stand twelve hours near the fire; then pour it away, and wipe with a clean cloth.

To Clean Gilding.

Brush off dust with a feather brush. Never wipe with linen, it takes off and deadens the gilding.

To Clean Steel Knives and Forks.

The moment used knives are taken into the kitchen, they should *be dipped* in warm water and wiped, *taking care not to wet the handles.*

Knives are cleaned on a board covered with India-rubber, with brick-dust sold for the purpose. In some large families Kent's knife-cleaner

is used. This machine saves labour, but requires care in putting the knives in. Printed directions and a powder for it are sold with the machine.

Knives are cleaned on the board by being rubbed smartly on it, with brick-dust spread on the surface. Steel forks are washed, dried, and also rubbed on the board with brick-dust. The intervals between the prongs are cleaned with a small bit of stick wrapped in leather and rubbed in brick-dust.

Knives are often stained by fruit or vinegar. The stains can be removed by rubbing them with a piece of raw potato before they are cleaned on the board.

To make Windows like Ground Glass.

Make a *hot* solution of sal-ammoniac. Brush the solution over the pane or panes; the moisture will instantly evaporate and leave a beautiful radiated deposit.

Flies.

House-flies are very destructive to furniture. They may be effectually destroyed by mixing half a spoonful of ground black pepper, a teaspoonful of brown sugar, and a teaspoonful of cream. Place the mixture in a room where flies are troublesome.

Or :—Put saucers of strong green tea, sweetened, about the room. This will poison flies.

They also dislike elder leaves, and will keep away from them.

To Kill Beetles or Crickets.

Parings of cucumber strewn near their holes, or strong snuff.

To get rid of Ants.

A little green sage placed in their haunts will drive them away. Quicklime scattered over their hills and watered, will destroy them.

How to take Ink out of Boards.

Strong muriatic acid or spirits of salts, applied with a piece of cloth; afterwards well washed with water.

To Purify Bottles.

Wash well with water and powdered charcoal.

To take out Spots of Ink.

As soon as the accident happens, wet the place with juice of sorrel or lemon, or with vinegar, and then rub with best hard soap.

Cement for Glass.

Equal parts of flour, powdered chalk, and finely pulverized glass; half the quantity of brick-dust, scraped lint, and white of egg.

To Preserve Water Fresh.

Put into the barrel or cistern 3 lbs. of black oxide of maganese, powdered; stir it well, and the water will keep good an indefinite time.

THE LAUNDRY AND FUEL.

THE LAUNDRY.

WASHING is in the present day seldom done at home, unless the family reside in the country, for drying-ground in London and other large towns is wanting. The laundress, therefore, fetches the soiled linen on Mondays and returns it on Saturday. The charges for washing differ in different places. In London *it is possible* to get it done for 1*s.* per dozen, including everything; but this is not the price of *good* washing. Ordinary London charges are—2*d.* each the large articles of underclothing, except petticoats, which vary from 4*d.* to 6*d.* or 8*d.*, according to trimming; 1*d.* the stockings per pair, collars 1*d.* each, cuffs 1*d.* the pair, table-cloths 4*d.*, kitchen do. 3*d.*, table napkins 1*d.* each, sheets 4*d.* per pair, towels 9*d.* per dozen, handkerchiefs ½*d.* each, fish cloths 1*d.* each, counterpanes 1*s.*, curtains 2*s.*, etc. etc. Servants are usually allowed 1*s.* 3*d.* per week each for their own washing.

But many trifling articles may be washed at home even in London, and the house-mother who can do her own lace, or the costly trifles belonging to the baby, will find that she saves much more than the pence charged for washing. Fine work and lace will last instead of rapidly going to rags.

Two books should be kept for the laundress—one at home and one in her hands—to prevent any possible loss of the list. The clothes should be looked over on Monday morning, sorted, mended if required, and put up for the wash. All stains should be removed before the article is sent.

The laundress brings the clothes home on Saturday. The housemaid should count it over carefully by the book, and look at the marks, so that nothing may be *changed*, for an exchange is sometimes as bad as a loss.

Washing at home must now be taken into consideration. A woman is generally hired to assist the servants where there is no washing-machine; her wages are in London 2*s.* a day, and she expects beer three times a day, and gin-and-water at night. Everything is put ready for her before she arrives.

Where a laundrymaid is kept, no assistance is of course given, though sometimes the under servants assist in the ironing.

The washing and wringing machines of recent invention make household washing, where there is a drying-ground, both cheap and easy. In general, servants will not use machines, disliking the trouble of cleaning them; the only ones which obtain favour in their eyes are the sewing, and the washing and wringing machines. Where these are possessed (with the ground for drying) it is far better to wash at home. The family are safer from infection of all kinds, and it is decidedly cheaper and pleasanter.

We give for home washing some few receipts, which may be found useful.

Clothes should be well aired before they are sent up from the laundry, and sorted into sets according to their marks.

To Wash Clothes.

Half a pound of yellow soap, 1 lb. of soda, ¼ lb. of lime, to three quarts of boiling water; let the lime and water remain all night; boil the soda and soap to a paste in three pints of clean water; when boiling, put the lime water to it. Soak the clothes and towels over night; wring them out and put them into the boiler with from half to one pound of soap; boil twenty minutes, then rinse them out.

To Bleach Linen.

Pour over a quarter of a pound of chloride of lime one gallon of boiling water. Let it stand two days, stirring it occasionally; then pour it clear off, and bottle it for use. When required, add half a pint to a quart or three pints of cold spring water. Wash your clothes well, and rinse it from the soap; then put it into the above, and let it steep for a few hours; pass it through clean water, and you will find the colour much improved.

Borax used in Washing.

Quarter of a pound of refined borax to five gallons of water; powder the borax; dissolve it in boiling water in the above proportion, and use. It is an excellent bleacher, and may be used for the most delicate laces even; it also saves soap.

A little pipeclay dissolved in the hot water cleans very dirty linen with half the soap required without it.

To Remove Ironmoulds.

Wet the spot; lay it over a hot water plate, or strain it over a basin with hot water in it; put a little salts of lemon on the spot; wash it as soon as the spot is removed.

To take out Mildew.

Mix soft-soap, powdered starch, half as much salt, and the juice of a lemon. Paint both sides of the linen with a brush; put it out on the grass till the stain comes out.

Clothes Lines.

Gutta-percha clothes lines are stronger and much more durable than common cord. They can, moreover, be cleaned, and are not affected by wet. When the clothes line is done with, a little hot water will convert the material into a soap-bowl.

To Remove Wine-stains from Linen.

Hold them in milk that is boiling on the fire, and they will soon disappear.

To Clean White Veils.

Make a solution of white soap; let the veil simmer in it for a quarter of an hour; squeeze in warm water and soap till it is clean; rinse it in cold water, in which put *a drop* of blue water.

Pour boiling water on a teaspoonful of starch; run the veil through this, and clear by clapping it. Pin it out on a cloth or a cushion, very evenly, by the edges to dry.

To Remove Stains made by Acids.

Wet the spots and lay on them some salt of sorrel, rub it, but do not wet it again. Then wash it out.

(*See* also Linen Closet.)

To Wash Coloured Prints, Cretonnes, etc.

Put a little bran into lukewarm water; wash quickly through; rinse *in cold* water also quickly. Hang to dry in a room without fire or sunshine. Iron with not *too* hot an iron. Use no soap.

The colour of mauve or violet may be preserved by putting a little soda in the water. Green can be kept by putting alum in the water; ox-gall also preserves the colours. But if coloured prints continue wet *too* long, nothing can save the

colours from running. They must be done quickly and not let lie in the water.

To Render Muslin, Lace, and Net Incombustible.

Mix with the starch half its weight of whiting. It answers also for lace flounces.

Or:—Dissolve half an ounce of sal-ammoniac in the rinsing water.

Alum also answers the purpose.

Substitute for Soap.

The sawdust of pine and fir trees will do quite as well as soap for washing coarse linen.

To render Muslins Uninflammable.

Tungstate of soda, prepared expressly for rendering fabrics non-inflammable, can be obtained by order, of any chemist for about 1*s.* per pound. Directions for use: To three parts of dry starch add one part of tungstate of soda, and use the starch in the ordinary way. If the material does not require starching, mix in the proportions of one pound of tungstate of soda to two gallons of water; well saturate the fabric with this solution, and dry it. The heat of the iron in no way affects the non-inflammability. Or, dip in a solution of chloride of zinc.

Washing Blonde.

For Blonde use fine soap, very slightly; wash it gently in water in which a little stone blue is dissolved; when clean, dry it; then dip it in thin gum water; dry it again in linen, and iron it flat; if washed finally in water in which a lump of sugar is dissolved, it will have the face of new blonde.

To Wash Lace.

Dissolve some salts of tartar in hot water. Put in the lace, and let it remain to soak for about half an hour. Then take it out of the water, and squeeze it dry.

The salts of tartar must be used when bought to prevent them melting away.

Blonde net or tulle may be washed in the same manner.

FUEL.

COALS—COKE—WOOD—CHARCOAL.

Coal is composed of carbon, hydrogen, oxygen, nitrogen, and sulphur, besides the mineral substances which remain in the ash.

Wood contains the same elements, with the exception of sulphur and nitrogen.

Newcastle coal is considered the best, as it burns without making any dust and leaves very little residue; but it requires to be stirred often, or it cakes and goes out.

Silkstone is a good burner with a very little ash.

Brooch coal burns very brilliantly, and leaves almost no ash. It will burn to the last fragment. It is considered, from its rapid combustion, a very expensive coal.

Anthracite is fit only for hall stoves.

The very cheap coal lately sold in London at 17*s.* per ton is of use only in the kitchen, as it makes so much dust that it quite destroys the furniture.

Coal contains a certain amount of water, some more, some less; it is therefore most economical to buy it in the hot dry weather, when the

water having exuded, the weight will be that of coal, not coal and water. Moreover, coal is sold much more cheaply in the summer than in the winter, the demand for it being less.

The price varies with the seasons and the locality.

Wood makes a cheerful, clean, and pleasant fire, but it is seldom—we may say never—burnt alone in our country. It heats ovens better than any other fuel. Joined to coal it makes the best fire imaginable, and we believe (in contradiction to the received opinion) that good hard chumps of wood save the coals. Fir apples, or the cones of the fir tree, make a wonderfully bright and pretty fire, added to the coals.

Coke is a preparation of coal, or, rather, the refuse of coal when gas has been extracted from it. It burns clearly and without a flame and gives out a great heat, and saves coal when broken into *very* small pieces and added to the fire. It can be used by itself in close stoves, but will not burn alone in an open grate. It is of use in the kitchen grate from its power of heat when in a thorough state of combustion. In the drawing room it is objected to on account of its peculiar vapoury smell; still, for people of small means, it is a saving. Packing the cinders at the back of the grate and putting on small coal, slightly moistened, also economizes coal. A ton of coals should make one fire for seven weeks.

Charcoal is wood burnt to mere carbon, the hydrogen and oxygen having been expelled from it. It is used only in stoves for the more delicate kinds of cooking. It should never be burned in bedrooms, as it gives off nearly pure carbonic acid gas, which is a deadly poison, and which causes drowsiness, lethargy, and death.

Cooking by gas is considered economical.

Wood for lighting fires is sold in bundles. A bundle used with skill will light three fires. Wheels made of resined wood are sold for the same purpose at ¼*d.* each, and ignite very rapidly; but this fact renders them dangerous to keep in the house, for fear of their igniting by accident.

Matches.

But little more than a quarter of a century ago every housewife saved her linen rags to make tinder; now they are saved to make paper. Brimstone-tipped matches sold in a bunch, but spread out like a fan, were at that time sold in the streets by poor match-girls, a class as peculiar then as the boys with their "box o' lights" are now. What a change has the lucifer produced! The trouble of getting a light years ago can only be well understood by those who then used flint and steel. At length the great discoveries of Sir Humphry Davy in chemistry became known. Phosphorus became of commercial importance as a light-bearer. There were other discoveries of great use, particularly that of chlorate of potash. Phosphoric matches were soon reduced in price from five shillings a hundred to sixpence for the same quantity. Finally, by various improvements in their manufacture they were reduced to their present price. It was in 1842 that Mr. Reuben Partridge obtained his patent for making splints, without which only half progress could have been made in the cheap manufacture of matches. Kraft, the discoverer of phosphorus, travelled through Europe, and was received at various courts to show his inventions. Schrötter, the great Austrian chemist of

Vienna, discovered in 1845 a method of rendering phosphorus less combustible than it is in its ordinary state, yet quite as efficient as a source of light. To this discovery we owe the present popular matches which light only on the box, as Bryant and May's do.

To Extinguish a Fire.

A solution of 5 ounces of ammonia in 1 gallon of water will extinguish a fire.

To Revive a Dull Fire.

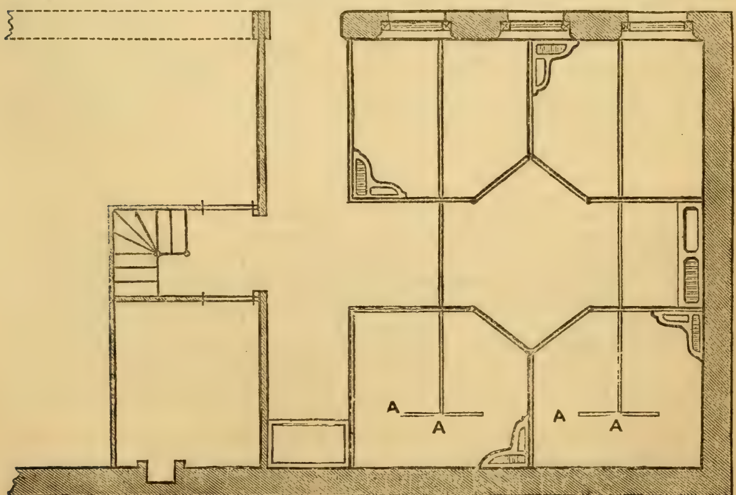
Sprinkle lightly a little powdered nitre over it.

THE STABLE-YARD AND ITS OCCUPANTS.

Of all animals destined for the use of man the horse is the most useful and profitable, as he is the most noble, generous, and patient, conducing most to our profit, pleasure, and sport, notwithstanding the abuse, ill-treatment, and overwork to which he is subjected by the thoughtless, the ignorant, and cruel. Thanks to the Society for the Prevention of Cruelty to Animals, and the highly advanced state of civilization in this country, much is daily being done to better and improve the condition of the horse and of all other animals ; still very much remains to be done. It is therefore both the duty and interest of every man possessing a horse to see that he is properly stabled, carefully groomed, fed, and shod, and that he purchases one suitable and fitted for the work required of him.

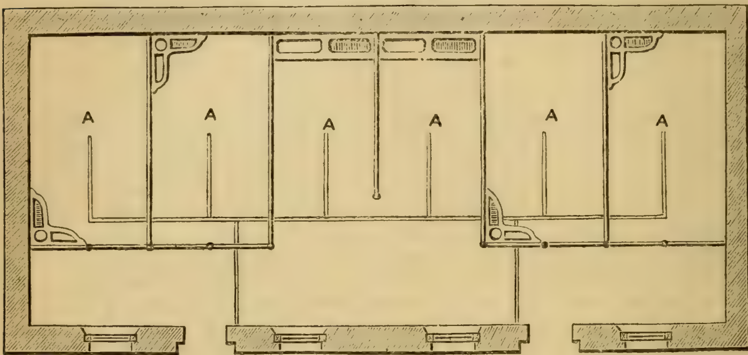
Stable.

Every one will prefer to have the stables near his house, if not on his own premises ; in either case, if they are already built, he must do the



Ground Plan of a Stable.
A. Drains.

best he can with them. Old buildings are for the most part very defective, badly drained, and badly ventilated. This must at once be remedied, and may generally be done at a moderate expense, which will be amply repaid by the improved health and comfort of the horses. New stables are better, but they also frequently require alteration.



Ground Plan of a Stable.
A. Drains.

For the guidance and assistance of those proposing to build their own stables, subjoined are some plain, useful remarks on the building, draining, and ventilating, and also some plans for the arrangement of the stalls and boxes, and designs for stable fittings, selected from the catalogue of the St. Pancras Iron Works Company, where fittings and articles of stable furniture will be found, both for quality and moderate charges, equal to any in London. These plans can be varied and enlarged according to circumstances.

Aspect.

When about to build a stable, the first consideration will naturally be the selection of a site. We need not insist on the advantages of a southerly aspect, they are almost self-evident. The stables will be much more cheerful, and much warmer, and enable the groom to avail himself of every gleam of sunshine to open the windows and thoroughly ventilate the interior.

Unfortunately it is not always possible, from the disposition of the ground and premises, to manage this. However, let it be borne in mind that such is the best, the west the next best, and the north-east the very worst.

It should not be forgotten, also, that a thorough drainage is one of the most important points, and every natural slope of the land should be taken advantage of in this respect.

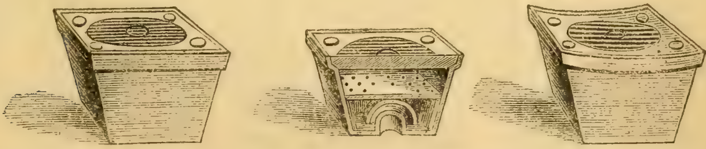
Drainage.

Having settled the site and the plans of the stables, to which we will refer further on, the first works to be provided for will be the drainage, for these will have to be carried out simultaneously with the foundations. The drains will be of two sorts, which should be kept as far away from one another as it is possible to manage,—first, those connected with the drainage of the interior of the stables; second, those intended to carry away the surface water and collect the rain-water from the roofs, &c.

Sewers.

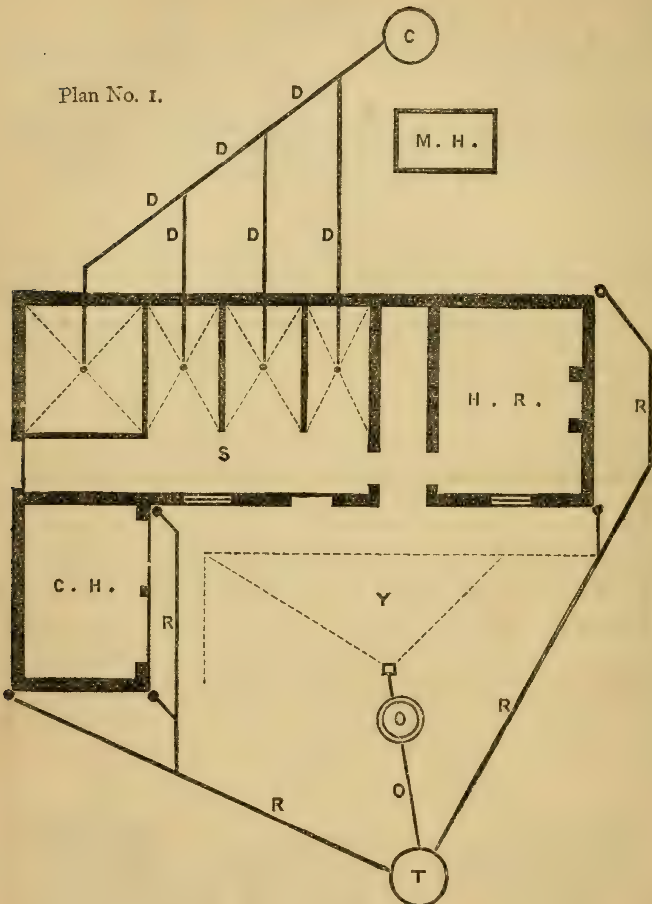
There are four conditions which are to be regarded as indispensable in the construction of all drains from all buildings whatsoever. These conditions are :—Firstly, that the entire length of drain is to be constructed and maintained with *sufficient declivity* towards the discharge into the cesspools to enable the average proportion and quantity of liquid and solid matters committed to it to maintain a *constant* and *uninterrupted motion*, so that stagnation shall never occur. Secondly, that the entire length of the drain is to be constructed and maintained in a condition of *complete impermeability*, so that no portion of the matters put into it shall accidentally escape from it. Thirdly, that the head of the drain shall be so efficiently trapped that no gaseous or volatile properties or products can possibly arise from its contents. And, fourthly, that the low extremity of the drain or point of communication with the cesspool shall be so completely and durably formed, that no interruption to the flow of the drainage or escape shall there take place, and that no facility shall be offered for the upward progress of the sewage in case of the cesspool becoming surcharged.

For most purposes a fall of two and a half inches in ten feet will be sufficient, and the drain should be of three inch glazed stoneware pipes (four inches for w.c.), with carefully made socket-joints laid in the direction of the current, and cemented. For the head of the drain we would recommend the bell-trapped horse pots, which are to be had at all stable furnishing ironmongers, taking care that they are sufficiently large and of good strong quality.



The cesspool for sewerage should be well away from the tank provided for the reception of the rain-water, and well puddled with clay on the outside and cemented inside. Precaution should also be further taken that all sewage drains should be laid below the rain-water drains, so that in case of any accidental defects no matter will by any possibility taint the water supply. (See Plan No. 1.)

Plan No. 1.



Rain-water Drains.

These will subdivide themselves into two, those laid to collect the drainage of yard, &c., and which may be common pipes laid dry, and leading to an ordinary cesspool made of bricks laid without mortar, where the water will collect and gradually lose itself; the others connected with the down pipes from roofs and leading to a rain-water tank. These should be laid with the same care as the sewer drains, the tank constructed in the same way with an overflow pipe to lead to cesspool just mentioned.

Buildings.

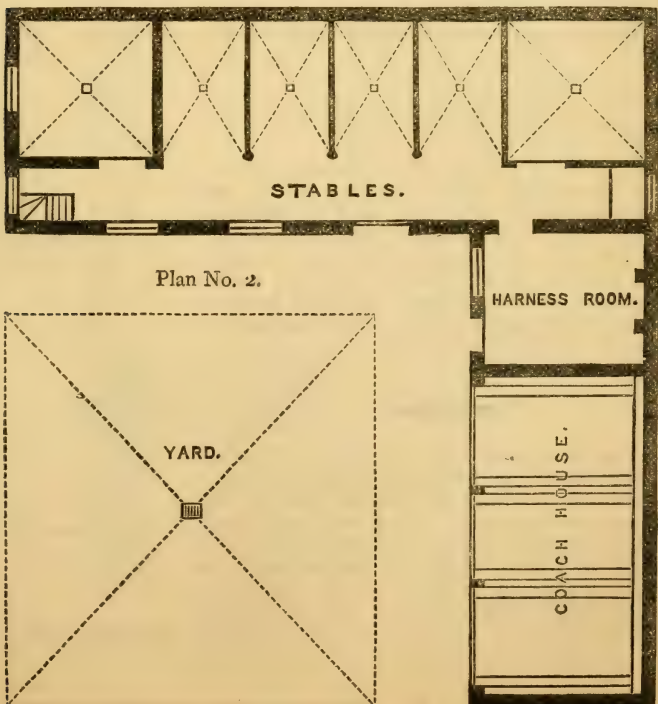
Having determined upon the site for the stables, the next point to study will be the general arrangement of the plan, and the materials for construction.

Materials.

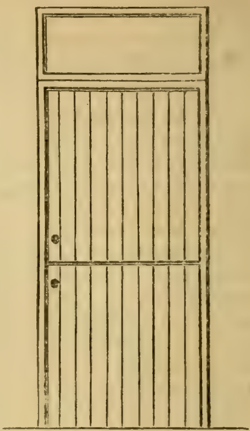
As to the materials, economy will dictate that preference should be given to those supplied by the immediate neighbourhood ; and we should advise that where a professional architect is not employed, the builder be required to make a drawing and a specification of the works which he will perform for the named price. Also, that all the requirements should as much as possible be foreseen, so that afterwards no alterations be made in the building, as otherwise it will be impossible to determine the limit of the cost. Should the estimated price come to a higher sum than was anticipated, we should not recommend to attempt to get the builder to take something off the amount, as he will only do so by scamping the work ; but premising that he is a respectable and well-recommended man, we should advise that the extent of the building be reduced in preference to the quality of the work. Cheap work and cheap materials are always the dearest in the end.

Plans.

The plan of the building will vary very much according to the aspect,



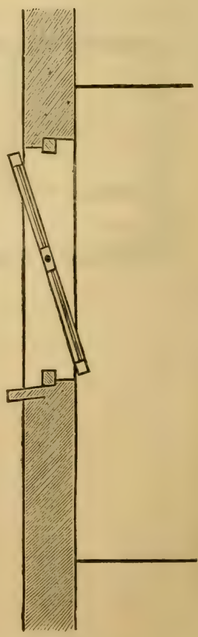
Plan No. 2.



disposition of land and other premises, and other local circumstances. These should be very carefully studied, and the plans well matured, as the success of the building will greatly depend on the disposition of its various parts. We will lay down as one of the first principles, that no stall should be less than six feet wide by ten feet long, no loose box less than ten feet square, and no stable less than ten feet high from floor to ceiling. Passage in rear of stalls, five feet wide.

Such arrangement as will put all the horses' heads the same way, with the light and ventilation behind them, will be the most preferable, as enabling the doors and windows to be opened without placing the horses in a draught. (See Plan No. 2.)

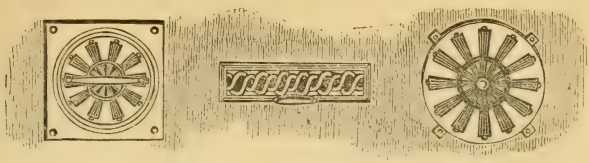
The doors should be wide and high, and hung in two heights, with fanlight over (four feet by seven feet at least), that the horses may go in and out freely without a chance of knocking themselves about. One often sees a horse hesitating before entering a stable ; and when after a little coaxing he is persuaded to come on, he will do so with a rush. Such a horse has no doubt, at some time or other, hurt himself when passing through a door either too narrow or too low.



The light should be full, as tending greatly to the cheerfulness of the interior. It is also well known that horses who work in darkness, such as those in the mines, eventually become blind. Their sight, therefore, must be to some extent affected by the quantity of light which they enjoy. The sashes also should be hung on centres in their height, as the most advantageous method for ventilation.

Ventilation.

To complete the ventilation, the only further requirements will be an opening in the ceiling—not immediately over the horses, but in the rear over the passage, fitted with an ornamental ventilating grating, to be shut and open at will, leading to an air-flue laid between the joists, and conducting the foul air from the stables to the outside through an ornamental perforated air brick or iron grating. A similar ventilating grating, to

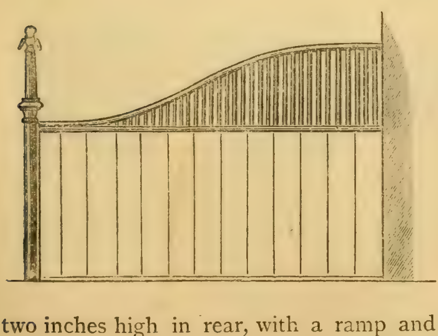


regulate the admission of fresh air, will only be necessary where the doors and windows are small, and fit very accurately.

Paving.

The materials for paving should be of the hardest quality, on good sound ballast or concrete foundation. Any absorbent materials must be rejected—first, because they will not be of sufficient durability; and, secondly, because from their nature they will retain part of the manure, and the stables will never be sweet. The paving of boxes and stalls should be laid with a regular gentle slope to the drain, which should always be in the centre. Irrespective of other advantages, the horses stand on the level, and take their rest more comfortably.

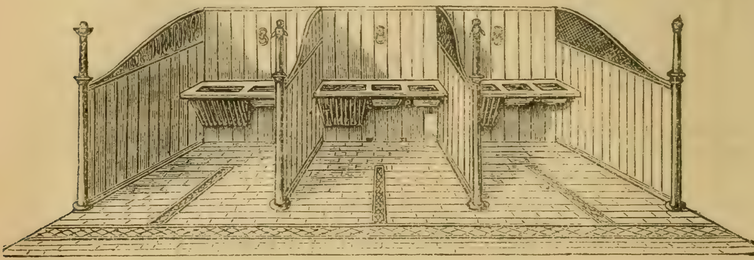
An occasional sprinkling of gypsum (sulphate of lime), when cleaning the stables, will be found to act as a great purifier. Its great affinity for ammonia causes it to absorb a great quantity of the gases generated in the stables, which will thereby lose all their offensive smell, and none of the ammonia will be lost, but will be retained in a condition serviceable as manure.



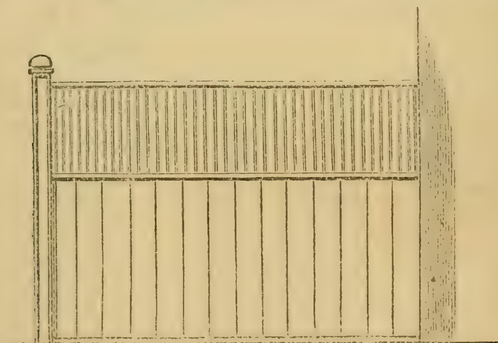
Partitions.

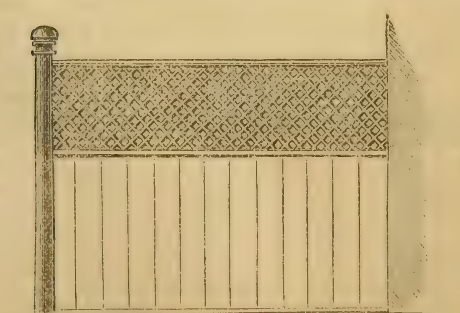
The partition for stalls will be match-lined both sides, and about four feet two inches high in rear, with a ramp and rising to six feet two inches towards the mangers; with iron pillar at the end next passage, with rings for pillar reins. Sometimes also the match-lining will be carried

through in a level line, and the ramp formed by a cast-iron ornamental panel.

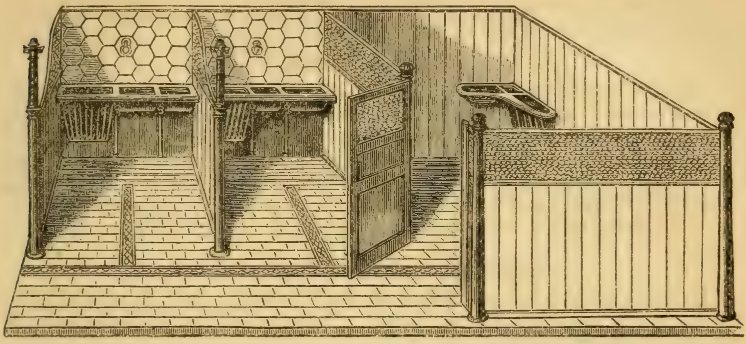


For loose boxes the boarding will be from five feet to about five feet



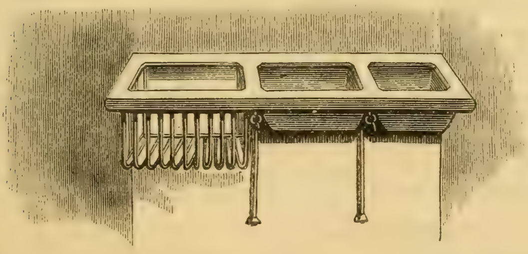


four inches high at most, with a two-foot ornamental iron panelling over.

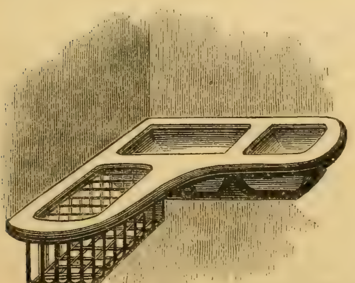


Mangers.

The best mangers are those containing hay-rack, corn manger, and water-trough in one, as per sketch; and we more specially recommend that preference should be given to galvanized iron.



The wall over the manger should be match-boarded to the height of partitions, and lined with iron hoop bands, sheet zinc over the joints of match-lining, or enamelled tiles, to prevent horses biting at it when being cleaned.



The manger will have two rings for halter reins, and a ring and galvanized chain fitted in wall over same.

Harness Room.

This should be at least ten feet square, and have in it a fireplace fitted with range with boiler attached. A handy supply of hot water will be found most advantageous in the management of the stables, and we need not point out the necessity of a fire for drying the rugs, horse-cloths, saddles, harness, &c., in winter time.

This room should be fitted with convenient hooks and brackets for the

hanging and cleaning of harness. These are of all sorts of designs, in which individual taste will be the best guide.

Coach-House.

In the arrangement of the coach-house care should be taken that it be so situated that it have a long front to the yard, so that the carriages may be housed side by side, and not one behind the other; each carriage to have its doors, so that any particular carriage can be run in or run out without disturbing any of the others. When this is not practicable, the coach-house must be of sufficient depth to allow of two carriages standing one behind the other, with a space of at least eighteen inches between them.

Hay Loft and Corn Chamber.

In most stables, in addition to the coachman's rooms, there is a corn chamber and hay-loft over the stable. The former is generally boarded off, lined all round with sheets of zinc or tin to keep out the vermin, and the door is provided with a lock, of which the coachman keeps the key, and gives out at stated times the corn for so many horses for so many days. By this means he keeps a check upon the consumption, and prevents waste and pilfering; both of which are more likely to occur when the supply is unlimited and easy of access. When there is not a regular corn chamber, one must either be made or a large bin provided, and the oats brought from the corn chandler as required, in quantities of two or three quarters at a time, as many as the bin will contain, which will be found a more expensive proceeding. Hay, from being bulky, is almost invariably stowed away in the loft, which should hold at least half a load; it must be stored away carefully, and nothing allowed to run about or play on it. Hay will keep good and sweet for some time, if in a dry place and not meddled with. If the loft be large enough it will be found better and cheaper to buy a load at a time; if not, or the loft be damp, a smaller quantity must suffice.

Stable Utensils.

Under this head is included all that is used in dressing the horse, and in cleansing the yard and stable.

The pitchfork is used to shake up the straw, of which the horses' bed is made; to remove all that becomes soiled and dirty; and, in general, to set it fair and straight. The handle should be kept clean, and the prongs bright. Price 2*s*.

The shovel removes the smaller particles, and the scrapings of the stable yard. Price 2*s*. 6*d*.

The besom or broom is used to sweep out the stable after the damp soiled litter has been removed, and to keep the yard neat and clean. Those made of birch are the best, and are bought at about 9*s*. a dozen, according to the quality and locality.

A manure basket to take up the droppings. This should be done before trodden about, to keep the straw clean, and the stable sweet. Price 2*s*.

The stable pail should be made of strong oak, bound with iron, and neatly painted. Cost, from 5*s*. to 6*s*. each.

A sieve, to cleanse the oats and chaff of all dust and small stones. Price 2*s*. 6*d*.

A quartern and a half-quartern measure to measure out the oats, beans, chaff, &c. for each horse's feed. About 1*s.* 6*d.* each.

The currycomb.—Horses of the present day are so much better bred than formerly, consequently their coats and skin are so much finer, there is now much less use for the currycomb, except to remove the dust from the body brush. On very rough-coated horses it may occasionally be used, but no other should ever be touched with it. In summer it is absolutely unnecessary, and in these days of clipping and singeing, in the winter it is almost equally so. It must always be used lightly, or it will severely punish the horse, and on no account should the teeth be sharp, or more than the eighth of an inch in length. Price 1*s.* 6*d.*

The body brush, or horse brush as it is sometimes called, is, in the hands of a good groom, the most useful implement used in dressing the horse, as it thoroughly removes all dust and dirt, stimulates the skin, and imparts a gloss to the coat. Cost, about 5*s.*

The water brush is to wash all dirt and mud from the feet and legs of the horse, and stains from his quarters, &c. Price 4*s.*

The mane comb, as the name implies, is to comb the mane and tail. It should be made of horn, have large teeth, and be used carefully and only occasionally, as in a general way a good brushing will answer the purpose without pulling out the hair. Cost, 1*s.*

The picker is a blunt iron hook for removing the grit and stones from the horse's feet. Some are made to fold up for the pocket. A good, careful groom will always carry one of these. Price 1*s.* 6*d.*

A sponge, too, is always necessary to dry the legs, &c., after washing, and for other purposes of cleanliness. Price varies according to place and quality.

Leathers and rubbers are also indispensable for drying the horse after work, and wiping him over after dressing.

An oil-brush and tin to hold the oil, and to rub round the hoofs before leaving the stable to go to work.

A wooden box for holding the stopping. Price 2*s.*

A *singeing lamp* and a *pair of trimming scissors* are also necessary. Price of former about 10*s.*, and of the latter 5*s.*

To avoid loss and confusion, there should be a place for everything, and everything in its place, and all the utensils should be kept bright and clean.

Clothing, &c.

Every horse standing in a stable must have a head collar with two reins long enough to go through the two rings fastened to the manger, and to reach the ground after being each attached to a weight or block made of hard wood or iron heavy enough to keep the reins from twisting or curling up, but not so heavy as to be a weight or strain upon the horse's head as he moves it. When in a box, too, a head collar is always handy on the quietest horse; on a tricky or unruly animal it is absolutely necessary, as he can then be at any time easily secured without risk or trouble.

Halters.—Two good web-headed hempen halters are also requisite in every stable, to lead the horse about without having to use the head collar.

Clothing.—There is a great variety of clothing, from the comparatively

inexpensive to the most expensive in make and finish. These consist of blankets or rugs of different degrees of warmth and thickness according to the time of year, a roller, a suit of body clothing, and a set of flannel bandages. The best material will be the cheapest in the end, as wearing so much longer than the cheaper kinds.

The blanket or rug should be cut back at the top of the shoulder, with a projecting piece on each side coming round and meeting in the centre of the chest, where they fasten with a buckle and strap. Each rug, too, should be bound with some strong material to prevent the edges tearing out. Two rugs will be found necessary for each horse.

A suit of body clothing may be made of various materials, but strong warm serge is best for winter, and a lighter kind for summer wear. It consists of a quarter-piece, hood and breast-piece, with roller to match. The roller must be well padded, to prevent bruising or injury to the back from pressure.

In winter, in a warm stable, a heavy rug and the body clothing will be found sufficient during the day, but at night the latter should be removed to keep it clean, and another rug substituted.

The flannel bandages are put on after the horse has had his legs washed, to keep them dry and warm. They are also of great service in illness, to keep up the circulation and warmth in the extremities. In hunting stables, where the horses must be occasionally sweated, it will be necessary to have two or three spare rugs and hoods in use for that purpose, and which should be carefully washed and dried. The price of clothing varies so much according to the quality and finish, it is difficult to name any, but a respectable saddler will at any time give an estimate for the kind required.

ADVICE AS TO HOW TO PURCHASE A HORSE.

To the inexperienced the purchase of a horse is a matter of some little difficulty and risk, and the object of this treatise is to throw out some few hints to enable the intending purchaser to ascertain first what sort of horse he requires (not always an easy task), then the best and safest way to buy him, and the best and most economical way to preserve him in health and condition to perform the duties required of him.

And first I must caution all purchasers against a very common fault—that of wanting, and expecting to find perfection in any horse; there is no such thing either in man or horse; all that can be done is to select one as nearly as possible approaching the standard required. As in everything, "a little knowledge is a dangerous thing;" it is particularly so in all relating to the purchase and management of the horse. The inexperienced purchaser should therefore place himself either in the hands of an experienced friend, or respectable dealer, and unless he knows something of an animal previously, be very cautious in purchasing at the sales by auction, or from advertisements, however flatteringly described, and seemingly fair in allowing trials &c. The great demand for horses, both at home and abroad, during the last few years has raised the price at least fifty per cent., and in some classes to even more than that.

There are several highly respectable dealers in London, and generally one at least in most large towns in the country, to whom an intending

purchaser may apply, and who, on his stating the sort of horse he requires, and the purpose for which he requires him, will show him some from which he may make a selection,—the dealer guaranteeing the horses to be sound and quiet to ride or drive, &c. As so much difference of opinion exists as to what constitutes soundness or unsoundness in horses, most dealers of the present day decline to warrant any horse sound, but allow the purchaser to have him examined by any veterinary surgeon he may select, whose certificate that he is sound at the time of purchase exonerates the dealer from all responsibility in that respect. Most horses purchased out of a dealer's stable are fat and short of work, and at first care is requisite that they be used carefully and steadily, and brought to work by degrees, or illness may probably result to the horse and disappointment to the owner; the dealer not unfrequently getting the blame for what arises, not from any fault of his, but from a want of knowledge or care on the part of the owner in too soon putting him to work for which he was not yet fit, and the ill effects of which a little care, a few days' patience, and a mild dose of physic would have prevented.

In his choice of a horse the purchaser will of course be guided by whether he wants one for riding or driving purposes; if for the former he will be particular that the shoulder lies well back, and if strong, not loaded at the top or points—that he has a good back, deep body, clean, flat, wiry-looking legs, and free from large splints, curbs, spavins, &c.; that his feet are firm and of moderate size—neither large and flat, and therefore necessarily weak, nor strong and narrow like those of a mule. When a horse has natural feet of the latter description they are generally remarkably sound, and will stand a great deal of work; but, as a rule, that shape is produced by internal disease, rendering the horse unsound when put to work.

If for driving purposes, he need not be so particular about the shoulders; for harness they may be stronger, heavier, and more upright, as many make capital harness horses that are, from their formation, very uncomfortable to ride.

Having met with one suitable for his purpose, the purchaser must not let a few pounds prevent him buying him, if rather more than the price to which he had proposed to go. For instance, an intending purchaser limits himself to price, say 70*l.*; he sees one the very thing he wants for a few pounds more, but declines to go beyond his fixed price. He eventually buys one he thinks may suit at about his price; after a time, finding he will not do, he changes him away for another as unlikely to suit him, paying 10*l.* or 15*l.* more, simply to get rid of the first. This again is changed away in his turn, and so on, till at last he finds himself still unsuited, with one, that altogether, after the different changes and payments, costs him nearly double the price of that he declined at first as being beyond his figure.

Horses are for the most part unfit for the London market, and for general use, till they are at least five years old; but a dealer will occasionally buy a good one at four years old, if at a corresponding price. Some men, and often young men, fond of riding, cannot afford to give a high price for a horse for their own use. He has either to put up with an unsound or a blemished one. But if his work is not hard, and he is a pretty fair horseman, he would find it advantageous to buy a good four-years old

and use him gently for a year, when, if all went well, he would have a good horse at a cheaper rate. A man must understand something about horses and their management to do this to advantage.

The Hack, or Riding Horse.

In selecting a riding horse much must depend upon the size and weight of the rider. The best and most useful size is from 15hds. to 15hds. 2in. The most fashionable colours are bay, brown, and dark chestnut. A really good riding horse, with good action and fine manners, is very difficult to find, as he must be good-looking, well-made, sound, and temperate, with breeding substance, action, and courage. His head should be lean, the eye bold and prominent, the muzzle small, with large nostrils. The neck should be good and slightly arched to bend to the bridle, shoulders lie well back and strong, but not heavy and loaded at the points, the body deep and round, strong back and loin, with good deep quarters and good firm legs and feet. He must ride lightly in hand, walk pleasantly and safely, trot freely, with good action, and canter easily, yielding to the bit without pulling. He must carry the saddle well back behind the shoulders; nothing is so uncomfortable or looks so badly in any description of riding horse as sitting on the top of the shoulders instead of behind them. The price will vary according to his action, manners, and appearance, as well as the weight he can carry. From 35*l.* or 40*l.* for the light blood hack with low action, to 70*l.* or 80*l.* for good useful sorts, and up to 150*l.* to 200*l.*, or even more, for first-class horses of great style and manners, with very grand action. Many horses of this class are very fast, and can trot up to twelve and fourteen miles an hour; but if they do seven or eight miles pleasantly and well, they will be fast enough, as few men care to ride faster.

The great defects to be avoided in purchasing a riding horse are a loose weak neck—horses so formed invariably getting their heads up, and being very uncomfortable to ride; low upright shoulders; and twisted fore legs—rendering the horse liable to hit either the inside of the knee or fetlock joint, which is very dangerous and likely to cause him to fall. A shy, nervous horse, too, should be avoided, as well as a hot, irritable one. Horses of a light chestnut colour are very often so, and in company will not settle into any pace. Ten miles is a fair average day's work. The expense of keep, shoeing, &c., will average 30*s.* a week for one, but where two or more are kept it will decrease in proportion.

The Ladies' Horse.

A perfect ladies' horse is of all descriptions the most difficult to find. So many good qualities, which, though desirable in all riding horses, may be overlooked in those for men, are here absolutely essential. Fine temper and courage, a light level mouth, and fine manners, are indispensable. He should be from 15hds. to 15hds. 3in. high, with a good head and neck, fine oblique shoulders, rather long in the body, with a good back and loin, deep strong quarters, firm sound legs and feet. If the hind legs are rather bent, so much the better; he will get them more under him, and consequently his paces will be easier—horses with straight hind legs invariably pitching most unpleasantly in the canter,

which must be easy and elegant. As few ladies ride more than from ten to eleven stone, including a nineteen or twenty-pound saddle, and ease and lightness in action are indispensable, the ladies' horse should be very nearly thorough-bred, if not quite so. He must walk well and freely, step lightly but sharply in the trot, with a rather long easy canter. He must be high couraged and free, but at the same time docile and temperate. A slow, lazy horse is as objectionable and disagreeable to ride as a hot, irritable one. The latter will sometimes go quietly and temperately in the hands of a lady, though irritable and fidgety when ridden by men, owing to the easier, lighter pull on their mouths. From the position of the ladies' seat and from the great length and incumbrance of the habit, it follows they cannot have the same power and control over the horse that men have, and accidents to them are more likely to be attended with dangerous results; hence greater care is necessary in selecting a horse for their use free from all tricks, nervousness, and vice.

Many are called good ladies' horses that have no other recommendation than their being very quiet, which with very many will cover a multitude of faults.

A few years since ladies rode no pace but the walk and canter, but lately the trot has become a favourite and fashionable pace; consequently a safe, sharp, easy trot is now essential in all horses to carry a lady.

The ladies' hunter differs in some respects from the riding horse for the road or park; he may be less showy and stronger. He must be eight or nine years old, have been well and regularly ridden to hounds for at least two or three seasons, and thoroughly understand his business; not less than 15hds. 2in. or more than 16hds. high, well above the weight he has to carry, well-bred and fast, but thoroughly quiet and temperate among other horses, and at his fences, which he should take freely and cleverly, go well into the bridle without pulling, and turn readily with a motion of the hand.

A hot, irritable, fretful brute, or one with a weak, loose neck is uncomfortable enough for a man to ride, but it is absolutely dangerous to allow any lady to ride such a one on the road—to say nothing of riding him to hounds—however good he may be represented to be.

The best colours for ladies' horses are bay, brown, dark chestnut, or black. There is an old saying, that "A good horse cannot be a bad colour;" and though no purchaser should decline to buy one that is likely to suit him on account of colour, those I have named are to be preferred.

The price of horses differs so greatly, and depends so much on their make, style, and qualifications, that it is difficult to name an average one; but a good ladies' horse, either for the road or the field, is always worth from 100*l.* to 150*l.*

The Hunter.

In selecting a hunter it is necessary to bear in mind the country in which he is to be ridden. In the grass countries of Leicestershire, Northamptonshire, &c., the hunter must be nearly if not quite thoroughbred: the enclosures being large, the fences strong, and the scent over the grass good, nothing but blood can go the pace and keep on jumping. The reason is this: when going with hounds the thoroughbred is never really extended, but is always going within himself, while the half-bred is going

all the time at the top of his pace, and necessarily becomes much sooner exhausted.

In a close country, on the contrary, the half-bred hunter is preferred. The pace is not so fast, and the horse is constantly eased by being pulled up and steadied at the fences; for it is a well-known fact that fences stop hounds more than they do horses. In countries of this description, as Essex, Herts, Surrey, &c., the land is generally ploughed, wet, and heavy, the enclosures are smaller, and the fences being principally bank and ditch, must be taken steadily and carefully. I have seen some quite common half-bred horses go remarkably well over a close country that could not live for five minutes over the grass countries.

The points essential to a hunter are a lean head and neck, well set on to good oblique shoulders, a strong back and loin, wide hips, a deep body and back ribs, good muscular quarters, and gaskins well let down to the hocks, and clean, firm legs and feet. He must be temperate, with plenty of courage, and have a good mouth and manners. His size will vary from 15hds. 1in. to 16hds. 2in., according to the weight he has to carry and the description of country he has to cross. From 15hds. 3in. to 16hds. 2in. is perhaps the best size for the flying grass countries, while from 15hds. 1in. to 15hds. 3in. will be found better and handier for the close deep country.

The Irish hunter is very much improved of late years. From the importation into Ireland of some of the best-bred English stallions, they have lost a good deal of the mean appearance they formerly had, are better-bred, and better-looking, with deeper and longer quarters. The Irish horse had generally a small neat head, oblique but rather weak shoulders, short back ribs, and mean, drooping quarters—all which has been very much improved, and some very first-class horses are now bred in Ireland. They are generally very clever, particularly good timber-jumpers, better adapted perhaps for the close heavy countries than the grass. When honest and good-tempered, they are very pleasant to ride, but from often being tricky and shifty require care in purchasing. The price of the hunter depends very much on his breed, appearance, manners, and ability. For the grass countries it would vary from 100*l.* to 300*l.*, and for the close plough countries from 80*l.* to 200*l.*

The amount of work that may be fairly expected of a hunter is one day a week with staghounds and three days a fortnight with foxhounds. From being particularly liable to accidents from blows, thorns, over-reaches, &c., it will generally be found that out of a stud of four, one will be "hors de combat." The best and hardiest colours are bay, brown, dark chestnut, and black. Light chestnuts are very often hot and irritable, and also bad feeders when put to work. Horses with short back ribs, too, are almost invariably bad feeders.

Hunters go in all forms, but a loose, weak neck and twisted fore-legs are always to be avoided. The former is the most dangerous fault a hunter can have: it is impossible to steady him at his fences or in any way interfere with his mouth, without his at once throwing up his head; consequently he cannot see where he is going, and serious falls are the result. With twisted fore-legs, the horse is liable to hit and cut himself under the knee, and on the fetlock joint, resulting in lameness and swelling, even if he do not fall.

The Carriage Horse.

These horses are bred principally in Yorkshire and the North of England, are bought there by the principal dealers and jobmasters at three and four years old, are broken, driven, and matched by them for some time before they are fit for the carriages of the nobility and gentry. Carriage horses are always either bay or brown, those without white are preferred. They must be fully 16hds. high, with rather long rainbow neck, strong but oblique shoulders, deep round body, with long muscular quarters, carrying a good tail, clean, flat legs, and good firm feet. Being kept more for show than work, grand stylish appearance and action are indispensable, and from being generally loaded with flesh, unless the feet and legs are good, they will soon wear out. A pair of well-matched carriage horses, with style and grand action, will fetch a long price, as much as 600*l.* or 700*l.* being sometimes given.

This is easily accounted for if we bear in mind the great expense, trouble, time, and risk that are involved in purchasing, breaking, and perfecting a pair of horses of the size and style required. In fact, so great is the risk and so many the disappointments, that many do not buy horses for their carriage, but prefer hiring them of a respectable jobmaster. But in this, as in all other sorts and descriptions of horses, there are various classes, and the purchaser can suit himself, from the pair of good useful average horses, at about 270*l.*, up to almost any price for first-rate style and action.

The great defects to which carriage horses are liable, from their size and general formation, are—defect of the wind, either roaring or whistling, horses with long rainbow necks very frequently becoming so after a bad cold, or an attack of influenza. All large horses, too, are more or less liable to their wind becoming affected after illness. Inflammation of the feet is another common complaint with horses of this class. Loaded with flesh to improve their style and appearance, and with high action in addition to their weight, two great causes of inflammatory attacks, they are very liable to this complaint, unless great care is taken to guard against it. Many carriage horses, too, have flat feet, rendering them doubly liable to an attack of this description; in them the sole of the foot will sink, becoming convex instead of concave. When such is the case great care is requisite in shoeing, or the horse will not be workably sound.

Some few years since grey was the most fashionable colour for carriage horses, now bays and brown have quite superseded it for all descriptions of horses; and unless he is very first rate, a grey horse is almost universally objected to.

In hiring or jobbing carriage horses the price per month varies according to the time of year. For the months of May, June, and July, the height of the London Season, it would be about 21*l.* or 22*l.* per month for a pair of good-looking, useful horses. For the rest of the year it would vary from 16*l.* to not less than 12*l.* per month, according to the time of year and the value of the horses. If hired by the year the price would be from 90*l.* to 100*l.* for a pair of horses, and 60*l.* for a single horse. The hirer in all cases to provide fodder, &c., and to pay all expenses, as shoeing, &c., unless a separate agreement is entered into, when the price will be proportionately more.

Horses for Light Harness.

In this class may be included horses suitable for gigs, T-carts, light broughams, dogcarts, &c. They should be well-bred, neck rather long and arched, with good back and quarters, strong oblique shoulders, carry a good head and tail, and be of a generally showy and stylish appearance, with high grand action. Horses of this description are more fitted for the park and for show than for real work, and command high prices.

For general use horses of a more common description will be preferred —less showy, and with less action; the better to stand the wear and tear of the hard roads, and must be selected according to the work required of them. Many of them are very fast, and can trot up to fifteen or sixteen miles an hour. All must have a certain amount of style and action to render them safe and pleasant to drive; but as a rule, the higher and grander the action, the less useful is the horse for real work, the wear and tear of horses of this class being so great as almost to preclude them from all that can be called work, and they are suitable only for the park and show.

The most fashionable colours are bay, brown, chestnut, and black. The height will vary from 15hds. to 15hds. 3in., according to the size and description of carriage he has to draw, and the price will vary from 50*l.* to 150*l.*, according to style and action.

The Horse for Heavy Harness.

Horses for this description of work are those that have grown too large and coarse for carriage horses, and are used principally to run in spring vans by railway carriers and others requiring great strength, combined with a certain amount of pace, and for which the cart-horse is not adapted from being too slow, and from his weight and heavy action liable very soon to shake himself on the road when put beyond a walking pace. Another sort is the common, coarse, half-bred horse, too light for a cart-horse, and too plain and heavy for private carriages. These are generally used in omnibuses, for which they are admirably adapted, as from their size and power, as well as being for the most part active, and on short legs, they can draw these heavy machines, often loaded inside and out, at the rate of six miles an hour—which is as fast as the frequent stoppages, the bad foothold on the stones, and the crowded state of our streets will admit.

The height of the former will be from 16hds. to 17hds.; that of the latter from 15hds. 2in. to 16hds. Good useful animals of either class will cost from 40*l.* to 50*l.*

COBS AND PONIES.

The cob is a strong little horse, about 14hds. high, and of various descriptions. The better class are bred principally in Norfolk or Lincolnshire. When well bred and good-looking, with action, they are not only very useful, but very valuable for carrying heavy and elderly men, as, being low, they are easy to get on and off. A good cob must have a good head, a strong but not heavy neck, good oblique and very strong shoulders, not loaded at the top or points, a deep round body, good loin, and strong muscular quarters and thighs—short, flat, firm legs, and good round feet:

he should walk freely and well; step sharp and high in the trot, and canter safely and freely; if, in addition to these qualifications, he is quiet, and does not shy or stumble, he is invaluable. A great many are bred in Wales, but by far the best come from Norfolk, Lincolnshire, and the North, where much more attention is paid to breeding them, and more care is taken of them than in Wales, where they run wild on the hills till they are three or four years old, when they are sent over into England in droves to be sold at the different fairs and markets.

The faults to be avoided in purchasing a cob are upright shoulders, want of courage, and want of action. Particular attention must be paid to the shoulders—that they are well-formed and oblique; many horses of this class having low, upright shoulders, which renders them valueless as riding cobs, and useful only for harness purposes—nothing being so uncomfortable and looking so ugly as riding on the top of the shoulders instead of well behind them, which must necessarily be the case with straight, low shoulders. In fact, the value of a cob depends almost entirely on his shoulders and action; for whereas in the one case he would be only worth 30*l.*, in the other he might be worth 120*l.*, or even more. Some very fast trotting cobs are bred in Wales, but they are mostly deficient in style and quality, though they can go a great pace. As a rule, Welsh horses are much better than they appear to be: they are hardy, useful, and strong, and will stand a great amount of work; and, in addition, can generally be bought at a price suitable for those who want a useful animal at a moderate price in preference to a showy and expensive one.

The next variety we will notice is the pony; and there are various sorts, or rather kinds, named after the counties and localities in which they are bred—as the Welsh, the Scotch, the Exmoor, New Forest, Shetland, &c. They are all rough, strong, and hardy animals, varying in height from 12hds. to 14hds., doing a great amount of hard work at a small expense for keep, &c. Though for the most part well bred, they are generally deficient about their shoulders, which are low and upright, like those of most ponies. They are of no value for general riding purposes, except to carry children, and are principally used to go in light harness, in which they will do an amount of work almost incredible if properly cared for. They are sure-footed and fast, if not overweighted, and some make first-rate shooting ponies; but they rarely grow to much value. The Welsh ponies grow to a larger size than the other sorts I have mentioned, and in all there is a marked improvement of late years, owing to small, thorough-bred stallions having been sent into the different districts for the purpose of improving the breeds. The prices would vary from 15*l.* to 30*l.*, according to circumstances, age, action, &c.

The Shetland pony is the smallest of his class, seldom exceeding 10½hds. high, some never growing above 9hds. high. They are like dray-horses in miniature, are very strong, active, and hardy; have small heads, good shoulders, capital backs and quarters, and from their great beauty, combined with general good temper and docility, are well calculated for the use of children. They are too small for any other purpose, except for drawing a small chaise. Some are very fast and enduring. I once knew one only 10hds. high, that had trotted ten miles within the hour in harness.

Defects in the Horse, which, while they Lessen his Value, do not interfere with his Usefulness and Ability to Work.

Crib-biting is a defect, or rather a bad habit (some call it unsoundness), to which many men have a great objection. The horse seizes the top of the manger, rack, or anything he can take hold of with his teeth, and sucks in the wind with a grunting noise. In some it at times produces indigestion and flatulency, but upon the generality it seems to have no injurious effect whatever. It is incurable, but may to a certain extent be stopped by buckling a strap rather tightly round the upper part of the neck of the horse. This strap should be removed during feeding, and then be replaced. I have known many very good horses crib-biters, but never one that it in any way affected, or stopped in his work. He should have plenty of good hay chaff with his corn, and but a small quantity of hay at a time in the rack.

Wind-sucking is only another form of the same bad habit. In this case the horse sucks in the wind without taking anything between his teeth. Like crib-biting it is incurable, but may be checked by putting a bit called "a whistle" into the mouth, which must be removed during feeding, and then at once replaced. The whistle is formed of a hollow iron tube about a foot long and an inch in diameter, open at each end, with three or four holes at equal distances in the tube. It is put into the mouth like a bit, and attached to a light strap over the ears, like a bridle-head. When the horse sucks in the wind it enters the iron tube through the three or four holes, and passes out at each end, instead of going down the throat. Horses that are slightly blemished, either in the knees, from any accident, or from firing, if sound will often do a great amount of work, and can be bought at a reasonable price—which to a man keeping horses rather for work than show is often a great consideration. They are intrinsically as good as if unblemished, though their market value is of course greatly reduced. For harness purposes I should not object to a whistler; many very good stylish horses are so. It is detrimental and unpleasant in a riding horse; but in harness, with no weight on the back, the noise is so slight as to be inaudible, and does not in any way interfere with his work. In short, many horses are practically and workably sound that no veterinary surgeon would pass; and though really useful and often valuable, are consequently to be bought at a reduced price.

Defects, Diseases, and Faults to be avoided in all Horses.

A loose, weak neck.—Horses so formed are extremely unpleasant to ride; they get their heads up, cannot see where they are going, and it is impossible to feel their mouths.

Twisted fore-legs.—Horses with this defect, when put to work, hit the inside of the fetlock joint, and very often under the knee as well. Both are highly dangerous, as the parts soon become swelled and sore, from repeated blows, rendering the horse liable to fall.

Capped hocks are very unsightly, but seldom cause lameness.

Diseased eyes, from any cause, are sure to terminate in blindness.

Stringhalt.—Catching up one or both the hind legs. When considerable, it renders the horse very unpleasant either to ride or drive.

All bony enlargements of the joints—viz., spavin, ringbone, sidebones, &c., as causing lameness, very difficult and doubtful of cure.

Laminitis, or inflammation of the laminæ, generally resulting in pumiced or convex soles of the feet.

Corns, unless small, as if not properly treated, they are very troublesome, often causing temporary lameness, and rendering the horse cramped in his action, and liable to fall.

Chronic cough.—Frequently terminates in broken wind.

Megrims.—An attack of giddiness, more or less violent, that frequently attacks some horses, rendering them for the time highly dangerous. Since condition has been better understood, and horses are fed more on manger food and do not have so much hay, megrims are not so common as formerly. Fast free horses are more liable to it than others. The cause is supposed to be determination of blood to the head.

Navicular disease.—Lameness in the navicular joint, and incurable.

An unnerved horse, as showing the horse's feet are diseased. Many unnerved horses will with care do a great deal of work either on the road or in the field. It is a merciful operation by which many horses can work and move about with ease and comfort, that must otherwise have been destroyed, or lived in pain and misery to the end of their days.

Roaring.—A disease of the respiratory organs, causing the horse to make a noise when put to any exertion.

All enlargements of sinews and tendons, arising from breaking down or violent strains, unless the horse has been properly fired for them, and is intended only for light, easy work, when he may stand.

All horses that show any sort of vice, as rearing, kicking, running away, being restive, and shy badly, or are vicious in the stable. Such animals are highly dangerous to all, but particularly so to the inexperienced.

Occasional Ailments of Horses.

Horses are subject to various ailments arising either from accident or disease, too numerous to mention in a treatise of this kind. The following are a few of the most common. In all that are serious, or admit of the least doubt, it will be better at once to send for the nearest veterinary surgeon, as few grooms are competent to treat any but the most plain and simple cases. Many valuable horses have been lost or rendered useless by their ignorance, that might have been saved by timely and proper treatment.

Influenza is perhaps the most common and tedious complaint to which the horse is liable. It is an epidemic, and most prevalent in the spring. The symptoms at first are those of a common cold, accompanied by more or less fever, and great and rapid prostration of strength. The appetite fails, the coat looks rough and unhealthy, the throat is sore, the flanks heave, the breathing is laboured and accompanied by a cough, the legs swell, and the inside of the eyelids and nostrils is red and congested, with a thick yellow discharge from the latter about the third or fourth day. The most important part of the treatment is to keep up the strength by every possible means; therefore bleeding should generally be avoided, and all directions of the veterinary surgeon be strictly carried out. The stable must be kept cool and well ventilated, but the horse kept warm with clothing and bandages. After a horse is pronounced pretty well

again, the effects of a bad attack of influenza will often last for some time, and in some are never recovered. One common result is an affection of the wind, either roaring or whistling, both of which are incurable. Swellings on different parts of the body and legs are not uncommon, and are only to be removed by care and good feeding.

In *common cold*, or *catarrh*, the symptoms are similar to those in influenza, but very much milder. The horse should be kept quiet and cool, the throat stimulated with mustard or liniment, to relieve the soreness and cough. He should be fed on bran mashes, with a few scalded oats in them, mixed with linseed, and have one or two fever drinks; after which, if the attack be slight, a few days' rest and quiet will set him right.

Congestion and *inflammation of the lungs* are highly dangerous, and no time should be lost in sending for the veterinary surgeon, and at once placing the horse under his care. This attack generally comes on with shivering, accompanied by hard, quick breathing and working of the flanks. The horse is dull, hangs his head, refuses his food, and his legs and ears are cold. When taken at once and in time the attack may soon be reduced, but if neglected, it is a work of time, and frequently terminates fatally.

Colic, or gripes, is another complaint to which horses are liable, the result generally of indigestion and gross feeding. Care must be taken to distinguish between it and inflammation of the bowels, as to an unpractised eye the symptoms are very similar. The horse is restless and uneasy, constantly looking round at his flanks, which are blown out and distended, and by repeatedly lying down and rolling, stamping, and kicking, showing the acute pain he is suffering. In colic there are intervals of ease and rest which do not occur in inflammation of the bowels. In this, as in other cases, it will be better and safer at once to send for the veterinary surgeon.

Thrush is a very common complaint in horses; it is a foul smelling discharge from the clefts of the frog both in the fore and hind feet, and is caused either from a want of cleanliness or from an inflamed state of the feet arising from a gross habit, or other causes. It occasionally produces lameness, and when very sore renders a horse unsafe on the road, where he is liable to tread upon loose rough stones. He should have a dose of physic, the feet be kept very clean, all the loose, ragged, diseased horn removed, and some common salt applied two or three times a week. Care must be taken to keep the feet dry and clean in the stable, and an alterative administered every three or four days. This treatment will soon effect a cure.

Broken knees are the result of a fall upon some hard substance, as the road, &c., causing a lacerated wound. They should be washed as clean as possible with warm water, then well poulticed to remove all the dirt and grit that cannot be removed by washing, which will not only remove the soreness and reduce the inflammation, but very materially assist the healing. After which, if necessary, a strong stimulant may be used to reduce the enlargements and promote the growth of the hair.

All horses, but particularly hunters, are exposed to accidents, as blows, thorns, and wounds. In most cases begin with a mild dose of physic, to cool the system. If the blow be severe use cooling lotions to subdue the inflammation, after which, if any enlargement remains, two or three

dressings with biniodide of mercury will be found to reduce it. The inflammation and soreness arising from thorns are only temporary. When possible they should be extracted ; but if not, poultices made of bran and linseed meal mixed should be constantly applied, hot. This will assist nature in promoting slight suppuration, and they will work out.

In all cases of wounds, if large and severe, they must be first washed to remove all dirt, &c., then neatly sewn up, and the part well fomented with warm water. If slight, they should be bound up if necessary, and washed with arnica and water several times a day.

Horses are occasionally pricked in shoeing, owing to the carelessness of the smith, or a nail may be picked up on the road. In either case the shoe must be removed, the horn cut away around the hole made by the nail to allow any matter that may have formed to escape, and the feet kept in a poultice till the inflammation has subsided, and all fear of further suppuration is at an end.

Swelled legs and *cracked heels.*—Many horses in the autumn are subject to swelling of the legs, but principally of the hinder ones. It is produced by the horse being out of health and condition, generally from debility, and is often accompanied by a cracking of the skin on the heels. Horses that have been summered at grass are particularly liable to swelled legs in the autumn, when put to work. Good feeding, tonics, and steady exercise, with an alterative ball twice a week, will soon set all right.

When the heels are cracked the horse should be kept in the dry, as much as possible at exercise. They must be kept clean, with some glycerine ointment well rubbed in about an hour before going out, to keep the skin soft and pliable, and less likely to crack out again. But they are at all times tedious and difficult to cure. Some horses always have their heels more or less cracked all the winter.

Lameness.—There are various and numerous causes of lameness in horses, brought on by hard work, disease, or the result of accident. Some of these rest and treatment will soon remove, and others are incurable. As this is not a veterinary work but intended to assist merely in the selection and management of horses, only a few of the most common will be briefly noticed.

Splints are small bony enlargements on the fore legs of a horse ; they are generally situated on the inside, but occasionally occur on the outside. They do not always occasion lameness except in first forming, when they are very sore. But few horses are quite free from them, and they are not generally of consequence unless interfering in any way with the action. Young horses are principally liable to them, as they are seldom met with in horses of seven or eight years old. There are several operations for removing them, as blistering, firing, setons, &c., but unless of any size and consequence rest and a strong blister will generally render them harmless.

All horses, and particularly hunters, are subject to strains of various parts which for a time produce lameness, and are very frequently the effect of severe work before the horse is fully prepared for it.

A *curb* is a swelling at the back part of the hock ; it generally occurs in young horses and is caused by a violent strain on that part. Some hocks are so formed as to be predisposed to throw curbs, and in them they are always likely to recur unless the part is properly fired. When

they occur in good shaped hocks the remedy is simple, and time and rest will effect a cure.

Treatment.—A dose of physic, the parts to be kept cold and wet with cooling lotion. When the inflammation has subsided, three or four strong dressings with biniodide of mercury and a few weeks' rest.

Strains of the back tendons and suspensory ligaments are violent strains of the tendons and ligaments between the knee and fetlock joint, and the hock and fetlock joint. Hunters and race horses are more liable to them than horses whose work is not so fast and severe. The horse should have a dose of physic, with cooling lotion constantly applied to the parts till the inflammation has subsided, after which strong blisters, and in bad cases the legs must be fired. Under no circumstances will the horse be fit to use for five or six months.

Bone spavin is a bony deposit formed inside the joints forming the hock. It is the effect of strain and of hard work. If taken in time it may sometimes be cured or at any rate much alleviated. It is often incurable and the horse will remain lame for life, but much will depend upon the part of the hock affected. In the early stages much may be done by blistering and firing, but when confirmed it is incurable. In a mild form the horse will start lame even if he goes sound when warm.

Corns are sometimes very troublesome. They come in the inside heel of the fore feet and are the result of bad shoeing or neglect in allowing the shoe to remain on too long and thereby to press upon and bruise that part of the sensible sole. Horses with low weak heels are particularly liable to them. When slight and recent they are of little consequence if carefully treated, but if confirmed and of long standing are incurable, and it is only by the greatest care and having the shoes removed once a fortnight, the horse can be kept sound. The corns must be well pared away, the shoe hammered out so as not to press on the heels, and the parts dressed with ointment to remove the soreness, keep down the inflammation and promote the secretion of horn. There are several receipts for this, but the veterinary surgeon can always supply one that will answer the purpose.

STABLE SERVANTS.

The coachman must be a steady, sober, good-tempered, and respectable man, his office being in most cases a very responsible one; many masters, either from want of energy, or through ignorance, leaving so much to his management. He not only has the entire control of the carriage and horses, buying the oats, hay, straw, &c., but very frequently selects and purchases the horses, so that, unless a conscientious man, he has it in his power to subject his master to serious loss and inconvenience. He must have had considerable experience in driving, to drive quietly and steadily without allowing the horses to jerk or snatch, which is most disagreeable and uncomfortable to those in the carriage, and thoroughly understand their management in the stable. No man, however willing, can attend properly to more than two horses and the carriage, and if the carriage be out on an average three hours a day he will find he has but little time to spare if properly turned out. The great inconvenience of having only one servant is, that on the carriage coming in wet and dirty, if it be not at once washed before the mud dries on, it will not only

take much longer to clean, but the paint and varnish suffer by the mud being allowed to dry on, while if this be done at once the horses are standing quite unattended to, at the risk of taking cold, getting cracked heels, &c.

In case of accident or illness, however, disabling one horse, three or more are generally kept, in which case a helper is indispensable, and the wet carriage and horses can then receive proper and immediate attention.

The coachman generally has rooms over the stable to protect the property, and to be on the spot in case of accident or illness to the horses, so that he lives rent free ; in addition to which his average wages will be 2*l.* per week including his livery, stable dress, coals, candles, &c. ; those of a helper will vary from 15*s.* to 1*l.* according to his age, and the locality. Where a coachman has but one horse and carriage to drive and attend to, a younger and less experienced man will answer the purpose, particularly in the country. In this case, as his time will not be fully occupied in the stable, he may be expected and required to make himself useful about the house, &c. His wages, too, will average 10*s.* or 12*s.* a week less than those of a superior coachman.

The Groom.

There are several descriptions and classes of grooms employed in private stables. With the stud-groom, for the breaking and training of thoroughbred horses, we have here nothing to do. The most important is the groom for the training and management of hunters. For this purpose he must be very steady, respectable, and intelligent, and have had considerable experience ; for as the hunter, to carry a man well and safely to hounds must be very fit, it follows that the groom must understand not only how to prepare him, but when he is fit.

The preparation required for a hunter is such as to enable him to carry a certain weight through deep ground for some hours, often at a great pace, hence his wind must be clear, his flesh hard and firm, he must be full of power and muscle to perform the severe and long-continued exertion so often required of him.

No groom can, without considerable experience, do this, as he must understand how to feed and treat the various habits and constitutions of the different horses that come under his charge, the quantity of corn, &c., and the amount of work best suited for each horse, and how to treat the various accidents, blows, strains, thorns, cuts, &c., to which all hunters are liable.

A hunting-groom cannot properly attend to more than three hunters without help. In studs of five or six he should have two helpers under him, and in large studs one man to every three hunters, his own time will be fully taken up in a general superintendence of the helpers, attending to the horses that are ill, or have met with accidents, &c., and perhaps riding second horses for his master when hunting.

A good hunting-groom is a very valuable servant, so much depending upon him as to the safety, comfort, and style in which a man is carried to hounds. He cannot of course make a good or fast horse out of a bad or slow one, but by proper care, attention, and exercise he can very much improve him, and a fair moderate horse fit to go will generally beat a really good one only half prepared.

His average wages, including extras, will amount to from 30*s.* to 35*s.* per week, but in his case, as in that of any first-rate trustworthy servant, a few additional pounds a year is money very well and economically laid out.

Another class of groom is one that is rarely expected either to ride or drive. His duties are to feed, dress, and attend to the horses generally, and clean a chaise and harness, &c. He should be active, respectful, and obliging; two horses with a chaise and harness will be as much as he can properly attend to; and should he be expected occasionally to drive or ride he will need a helper; nothing tends so much to spoil a servant and make him idle and careless in his work as giving him more than he can fairly and properly do. When a groom is required to help in the stable, and ride behind his master and family, I know of no one so useful and fitted for the purpose as a good steady lad out of a racing stable, and who has grown too heavy for that work, as he is sure to be a good stableman, and to ride well and smartly.

After these come the nondescript class, part groom, part cowman and gardener, who are more useful than smart or ornamental. They cannot be called grooms, they simply just feed and "look after" the horse, or pony and carriage, and are for the most part young fellows who are either too lazy or too loutish to try to improve or take any pride or interest in their work.

STABLE MANAGEMENT OF THE HORSE.

In the morning the first thing the groom does on entering the stable, which must not be later than six o'clock, if the weather be warm and fine will be to open the door and admit some fresh air; he will then give each horse a little water and a piece of hay; having eaten which, he will put on the hood and watering-bridle, and take him out for exercise. While out, the helpers will separate the dry clean straw from the damp and soiled, removing the latter to the manure heap. Thoroughly sweep and cleanse the floor of each stall and box, allowing the straw to remain turned up until the return of the horses, when it may be partly littered down again. Each horse will then have a feed of corn, and having eaten it, be well dressed and his stall or box set fair. When one groom only is kept or where the horses do a fair amount of work during the day, early exercise is impossible and unnecessary.

In dressing the horse the first thing the groom does is to turn him round in his stall, fold the rug back from his neck and shoulders, then well and carefully brush his head, neck, and shoulders with the body-brush, cleaning it with the currycomb as often as required. He is then turned back in the stall, the clothing removed, and his body, hind-quarters, and legs undergo the same careful and thorough brushing, care being taken to keep the brush clean with frequent use of the currycomb. He is next wiped all over with a damp whisp made of haybands, which entirely removes any remaining dust, and after being well wiped over with a linen rubber or wash-leather, his clothes are put on and secured by the roller. His eyes, nose, and anus are next sponged clean, his mane and tail carefully combed or brushed, first with a dry and then with a damp brush; the feet are carefully picked out and washed, the legs well brushed, and if

dirty or stained, well washed, and either rubbed dry or dried in flannel bandages. The stall is then set fair and the horse ready for use.

With grey or light-coloured horses, or that have white legs, the better plan will be to wash all stains off the quarters, &c., and to wash the legs with warm water and soap, rubbing the first dry and well bandaging the latter before proceeding to dress the horse, as by the time that operation is over the legs will be dry and the horse warm and comfortable.

In the spring and autumn, when the horse is shedding his coat and the hair is broken and thin, the body-brush must be laid aside, the whisp and rubber being then quite sufficient for the necessary dressing.

Before having the harness put on to go out the horse must again be wiped over, his mane and tail brushed, and his hoofs rubbed round with the oil-brush—some people object to the use of the oil-brush to the feet, and only have them done round with a wet brush.

On returning to the stable after work, if he be clean and dry, his feet should be well picked out and washed, and he should again be well dressed and set fair. But if he returns hot and tired and wet and dirty, the best and quickest plan is to wash him all over with tepid water, scraping him immediately as dry as possible, clothing him up, and bandaging his legs above his knees and hocks with flannel bandages. If the weather be warm, he may be washed in the open air, and a light suit of clothes put on, to be replaced by fresh as soon as he is dry ; but in winter, and if it be cold, he must be washed in the stable, and a suit of warm clothing put on until he is dry, when it must be changed. By this means the horse will be got fresh and comfortable in a much shorter time and with less fatigue to himself than if the dirt and sweat were removed in any other way and he was rubbed dry.

At seven o'clock, the horses that have not been out or done but little work may again have their clothing removed and be wiped over, which must not be done when the horse is tired with work and has been once made fresh. They may then be fed, their heads let down, their feet stopped, and be shut up for the night.

Food.

Hay for horses should invariably be the best quality ; many different sorts and conditions being more or less detrimental to the digestion and wind. Good old upland meadow hay is the best, as being the hardest, sweetest, and most hearty. It should be of a pale brown colour, and smell sweet and clean. Hay of a green colour is generally grown on low, marshy ground, and is often dusty ; while the dark brown indicates that the stack has been very hot from having been put together in too green a state before it was properly made. Both are detrimental to the horse, and therefore to be avoided.

The price of hay depends upon the quality, and the abundance or shortness of the crop. It varies from 4*l.* to 5*l.* 10*s.*, according to the season.

Clover hay is but seldom used in private stables as being too coarse, except occasionally to cut up and mix with the chaff. When of fine quality, and well cut, it is remarkably sweet, and gives a flavour to the chaff that will often tempt a delicate horse to feed.

Oats are the staple food for horses when in work, and are of various

kinds, English and foreign. The former are generally preferred, but some of the foreign oats are very good feed. Oats should be sweet, free from dirt and stones, and weigh nearly, if not quite, forty pounds per bushel. The lighter oats are generally deficient in kernel, while some of the heavier kinds, by thick coarse husks, make up the weight, which must be taken into consideration by the purchaser in making his selection.

The price will vary from 20*s.* to 30*s.* per quarter ; good oats for general feeding may be had for 25*s.* per quarter. The value of the oat depends more upon the thinness of the husk and the amount of meal contained in the kernel, than upon the size and weight, which is often the result of thick, coarse husks.

No oats should be used until they have been cut at least six months ; and if twelve or eighteen months they are so much the better. New oats, and oats that have been heated in the barn or stack, are not only very prejudicial to the horse, but it is impossible to get him into good condition on them, as being too soft and relaxing.

Some horses bolt their corn nearly whole, which consequently does not do them so much good as it otherwise would. A double-handful of chaff in each feed will, to a certain extent remedy this, but crushing or bruising the oats in a mill is a far better remedy ; in fact, I quite believe that to bruise all the corn for horses would be found the most economical plan, as they would derive greater benefit from it by more easy and complete digestion, a smaller quantity would go as far, and the improved power and condition of the horse amply repay the labour and cost of bruising.

By crushing or bruising I do not mean grinding to a powder, but merely crushing the husks and kernel.

Beans are used only occasionally in feeding private horses when they are exposed to bad, rough weather for any length of time, or when tired and jaded and worn down by long courses of hard work. In small quantities they will then be found very useful to invigorate the frame, and warm and stimulate the impaired strength and digestion ; but they must not on any account be used if the horse be suffering from any inflammatory attacks either of the internal organs, or of the feet and legs, being too heating. In the autumn, when shedding the coat, many horses are subject to swelling of the legs ; in such cases beans are particularly good ; a quartern of good old beans a day to a quartern and a half may then be given with advantage, and if assisted by a few alterative balls will soon reduce all swelling, and strengthen and invigorate the horse in every way. Beans should be at all times a twelvemonth old. New beans are particularly objectionable, and do more harm than good.

White peas have the same effect as beans, and are used in the same way. To be good they must be old. Some prefer them to beans for hunters and horses that do fast work. Some, however, do better on peas and others on beans, which it is the duty of the groom to discover, and act accordingly.

Bran is the husk of wheat separated from the flour after being ground ; it is very useful in the stable. It is made into mashes either hot or cold, and occasionally used for poultices for wounds, thorns, and blows. Mashes are very good given occasionally at night, instead of hay, as they have a laxative effect, and keep the horse's legs and body cool. After hunting, the horse should have a warm mash, with about a quartern and a

half of scalded oats in it instead of dry hay and oats, being easier of digestion, as from having often been many hours without food, he is apt to eat fast and ravenously, and thus fills the stomach with food it is not in a condition properly to digest. Sunday being an idle day in most private stables, Saturday is generally selected to give a mash, which may be hot or cold, according to the time of year and the condition of the horse. About half a pailful is the proper quantity. A horse should not on any account have a mash the night before hunting, or any other hard work is required of him. Some horses find a mash too relaxing under any circumstances ; when a quartern of dry bran mixed with the oats at night will have the necessary effect.

Chaff.—In all large establishments of working horses, as in the stables of omnibus proprietors and cab-masters, the object is to enable the horse to take his corn, &c. as quickly as possible and lie down to rest. For this purpose all the hay and clover is cut into chaff, and mixed with the oats, which not only enables the horse to eat it more readily and quickly, but also to grind it more thoroughly. Chaff is made of hay, clover, and wheat or barley or oat straw cut into short lengths, and then mixed. The general mixture for private stables is two-thirds good meadow-hay, and one-third clean wheat straw. Clover chaff is used principally for horses doing slower work than is generally the case with private horses.

Carrots are occasionally given to horses as a slight alterative, they should be washed clean, and cut up into pieces. Horses are particularly fond of them, a few now and then are very good, and keep the body cool, but they must be given sparingly to hunters and horses required for hard, fast work.

There are several kinds of green food for horses in the spring and summer, of which tares or vetches, Lucerne and clover are the principal. Tares or vetches when young are very good for fattening horses, but are then too relaxing for work; as they get older and full of seed they are harder, and with some corn, horses will do a considerable amount of work on them, but in a general way they are used only sparingly as a natural alterative, and given in a small quantity once or twice a day. Lucerne is a green meat, as tares, but harder and drier in its nature ; a piece of Lucerne once sown will last for years, yielding at least five cuts every year ; it wants to be kept very clean, and occasionally manured. Horses are not as fond of it as of tares and clover.

Clover like tares is very fattening, and too relaxing in a young and green state for horses to work upon. There are several other kinds of green food, but they are in all respects inferior to those I have mentioned.

Straw.—For the bedding of horses wheat straw is generally used. The greater part of wheat is now thrashed out by machine, and but little by hand, consequently the straw is not so good, and does not last so long as formerly, the machine breaking and bruising the straw so much more than the flail.

A careless groom will use at least one truss of straw per week more to each horse, than a good careful one will use. The latter will be careful in the morning on turning up the bed to separate the soiled, dirty straw from that which may be used again ; removing the former from the stable, he will then, after thoroughly sweeping out the stall or box, put what may be a little damaged at the bottom, and the clean at the top. Such a groom will

use about two trusses to two and a half per week while another would use at least one truss a week more.

The best way to economise litter is to sweep the stall or box out as dry and as clean as possible in the morning, and take up the droppings regularly at once, before they are trodden into the straw.

Straw when good is bright and clean looking. The price will vary from 30*s*. to 45*s*. per load according to the season. In wet seasons it is difficult to get good straw, as it is generally then dark and mildewed-looking from the rain. At any time, good oat or barley straw is better for cutting into chaff than wheat straw, but it is not easy to obtain ; most farmers keeping it for fodder for home use.

Economy in the stable depends entirely upon the groom. If he does his duty well and conscientiously, he will keep down the expenses as far as is practicable with justice to the horse. Nothing whatever is gained by buying cheap or inferior fodder, on the contrary the horse suffers in every way, in condition, appearance, and value.

Feeding.

The ordinary food for horses is corn and hay. They should have the corn four times a day—at about seven, eleven, three and seven ; and the hay twice—at night and in the morning. These times may be slightly varied to suit the convenience. The quantity of each must depend upon the size and description of horse, and the amount of work required of him. A full-sized carriage horse will require at least five quarterns of corn, and about twelve or fourteen pounds of hay, daily. These horses being kept for show and style rather than for work, are required to be full of flesh to give them a grander and more imposing appearance.

The hunter having hard, fast, and long-continuous work to perform, greater care is required in feeding him. Some hunters are delicate feeders, and cannot under any circumstances be induced to eat more than three quarterns of corn and beans in the twenty-four hours ; consequently they never look well, are never quite fit, and cannot come again more than once in ten days or a fortnight. Such horses must be got fit as best they may by changing the diet as often as possible, and by giving only a little at a time, but frequently. By changing the diet I mean, by sometimes giving old beans with the corn, at other times old white peas, and adding at one time good hay chaff, at another clover chaff, and occasionally a few pieces of chopped carrot mixed with the corn—in fact, trying almost everything that will tempt a delicate horse to feed.

From five to six quarterns of corn, with a few good old beans or white peas, and ten or twelve pounds of good old meadow hay, is the average daily food of a hunter going three days a fortnight. It is a great mistake to get a hunter too fine, as the work being hard and long-continued, he must be full of muscle and strong, but at the same time in good wind. It is difficult to lay down any definite rules for feeding hunters, as some require much more food than others to keep them in the same condition. As soon as convenient after a day's hunting the horse should have some gruel—it is better than corn, as being easy of digestion and more invigorating for a tired horse. A hack will require from three to four quarterns of corn a day, and about the same quantity of hay as the hunter. His work is much lighter and he requires a more round and fleshy appearance.

Beans are only occasionally necessary for hacks, and then only when much exposed to bad and wet weather. Harness horses must be fed in much the same way as hacks, but much depends upon their size and the work they are required to perform. Ponies require about two quarterns of corn daily, and seven or eight pounds of hay, some even less than that, as they are invariably hardy, and unless hard worked will keep fat on very little. Horses of all sizes and all descriptions should have chaff mixed with every feed of corn, as it enables them to masticate the oats more thoroughly, and so far assists digestion.

Water.

Where practicable it will be better for the horse to have water constantly by him in a small tank for the purpose, that he may drink when he feels disposed ; when such is the case he drinks less than when it is offered to him at stated times.

In stables unfitted with tanks the water must be taken to the horse not less than four times a day, and he then may be allowed to take as much as he pleases in moderation.

Pond water is the best for horses when it can be procured, and even when dirty they take it in preference to any other. Hard pump water is often injurious at first till they become used to it, but that is at all times preferable to stale stagnant rain water. Hard water will to some extent produce indigestion and consequently a rough staring coat.

Care must be taken to water the horse some little time before starting him on a journey, and also on his return, that he is not allowed to drink too much at first, and if the horse be heated and the water be cold, it should be just chilled before allowing him to drink, or serious results may follow.

Summering the Hunter.

There still exists much difference of opinion on this point, but when we consider that the great object to be attained is rest, it must be evident to all who have seen horses at grass in the summer, that the old plan of turning the hunter to grass is about the very least likely way to obtain it. The ground is then very hard, the sun hot and oppressive, and even in the shade under the trees, the horse is constantly tormented by flies. He is never still, walking backwards and forwards, kicking and stamping to knock them off, till, unable any longer to bear them, he takes a mad gallop round the field. This state of things cannot be rest, but more destructive to the legs and feet than any ordinary amount of work. In addition to which, the horse gets big and lusty on soft green food, all which has to be taken off at the expense of his legs and feet, before he is fit to go, and is another very unsuitable preparation for the work required of him in the winter. The modern plan, the advantages of which are every year becoming more and more apparent, is, at the end of the hunting season to cool the hunter, by giving him a dose of physic and then gradually taking off his clothing. At the end of a month he may be turned into a large cool box or shed, have from two to three quarterns of corn a day, according to his constitution, with green meat in sufficient quantities to act as a natural alterative and tonic to his system and get him fresh, but not fat and out of shape, as is too often the case. His hind

shoes may be taken off, and light shoes or tips put on the fore feet, and removed about once a month. These will prevent his feet getting broken away and preserve them in shape. If he require blistering, or has any lumps or bumps on his legs, from blows or thorns, to be sweated down, it should at once be done. For this the biniodide of mercury will be found the best. At the beginning of August at the latest, the hunter may be taken up, his legs and feet will be found to be clean and cool, he should have a dose of physic, and begin steady exercise; after which, *if* the groom do his duty, he will be free from the different complaints that usually attack a horse summered in the field, and when the hunting season arrives he will carry his master safely and pleasantly through runs that will soon stop the other for want of real condition.

EXERCISE AND WORK.

Unless the weather is wet and bad, every horse, whether in a stall or box, is better for going out every day.

The work of a carriage horse does not on an average exceed seven or eight miles. They are very often out for three or four hours in the day, but by far the greater part of the time they are standing about, while the occupants of the carriage are either shopping or making calls, &c. From their size and weight they are generally unfit for long journeys and hard work.

The work of a hunter is to carry a man to hounds; and in order to render him fit to do so safely and well, he will require a great deal of exercise.

Before the commencement of the hunting season he will require three hours' steady walking and trotting exercise, with occasional sweats and strong gallops; but afterwards, supposing he is ridden to hounds three days a fortnight, he will require but little fast exercise—from two to three hours a day good steady walking will keep most horses quite fit.

To go with stag hounds, a horse must be drawn rather finer than for fox hounds, his work being faster, but not so long continued. The meet is later; the deer is uncarted, and the run begins at once, seldom lasting more than from an hour and a half to two hours.

With fox hounds, on the contrary, the meet is earlier, and a fox is often not found till after a long draw. The run, from various causes—checks, bad scent, &c., is very seldom very fast or so long as with stag hounds, consequently the work of the horse is not so severe and distressing.

On leaving hounds, the hunter should have some gruel and a handful of hay at the first convenient place; he may then, if not fatigued, be ridden home at the rate of six or seven miles an hour. On reaching the stable, he will be washed and scraped as dry as possible, a complete suit of clothing put on, his legs bandaged with flannel bandages, some chilled water and moist food given him, and left till dry. He must then be wiped over, dry clothing put on, his legs well hand-rubbed, dry bandages put on, again fed and watered, and set fair for the night.

The fair average day's work for a hack or harness horse is nine or ten miles, in which case exercise is quite unnecessary. More harm and injury are done to horses by the grooms when at exercise than in any other way, and unless the man can be fully depended upon, the less they are exercised

the better. Where the horse is only occasionally worked, exercise is of course absolutely necessary, not only to preserve him in health, but to keep him steady, and from getting above himself.

Clipping or Singeing

Is one of the greatest improvements ever introduced into stable management. It is a blessing not only to the horse, but to every one who uses and attends to him. A horse clipped or singed will not only do double the amount of work on the same amount of food that a horse with his natural winter coat will do, but in the one case he will be fresh, cheerful, and full of vigour; while in the other, he will be dull, out of condition, and seldom or never dry and clean. I have seen horses (hunters particularly) that no care or food could get into condition till clipped or singed, immediately change for the better, and get big in their work.

The best time to clip or singe a horse must depend principally upon the state of his coat. Some shed their coat so much earlier than others, while in some horses it is much thicker and coarser. About the end of September is the best time for singeing, and three weeks or a month later for clipping.

Clipping requires much practice and very neatly doing to look well; it is far more difficult than singeing, and consequently is not so frequently used. The effect of both is the same—to shortern the long rough winter coat to the length of the short summer one, thereby preventing that extreme sweating which is always consequent on a long winter coat. It is performed with scissors and a comb. The former are generally curved, and of various sizes, to suit the different parts of the body of the horse for which they are used.

Singeing is performed with a lamp made for the purpose, burning naphtha or some spirit of the same description, and which is passed lightly over the whole body till the hair is reduced to the required length. It may be commenced as soon as the winter coat is partly grown, and must be repeated about every ten days or a fortnight till the coat is set and done growing, by which means the coat will not only be kept short but the hair will better retain the natural colour. After Christmas, about once in three weeks will generally be found sufficient to keep down the long, rough hairs.

In some horses the coat is of so thick, coarse, and woolly a nature, or has been left so long, it is impossible to singe it without burning it into holes, and making the horse look worse than before. In this case he must first be clipped close, and then the singeing-lamp run lightly over him; it can then be kept down by singeing, as in other horses, but his colour will be changed, as the part exposed, or rather left, will be the under part of the hair next the body, which is always of a different shade to the top hair, which, in horses that are begun early and singed frequently, from being never burnt quite down, retains its colour. After clipping and singeing, the horse should have a gentle sweat, be well washed, rubbed dry, and well clothed, after which he is fit and ready for his usual work.

Some few very well-bred horses have in winter so fine a coat that beyond removing the few long, ragged hairs about their flanks and quarters, no singeing is necessary.

Shoeing.

Several different plans have at various times been suggested for shoeing the horse, but none have as yet superseded that in general use, all the others having one or more great disadvantages. The horse must be shod according to his size and the amount of work he has to perform. The shoes ought to last at least three weeks or a month, as it is detrimental to the feet to have them removed oftener than once in three weeks; while on the other hand, they should never be on more than a month without removing. Care must be taken that, except where the horse has very strong feet, the horn is never cut away when shod; all that is necessary is to have the rough, ragged parts removed and the foot just rasped round the toe. If this were well attended to, there would not be so many lame horses; as, when left to themselves, farriers invariably cut away more horn at each shoeing than will grow before the horse has to be shod again, consequently they have but little left to hold the nails and bear the weight of the horse.

TRICKS AND VICES TO WHICH HORSES ARE LIABLE,

some of which arise from fear and nervousness, and others from vice or from improper breaking. All vicious and nervous horses should be avoided by all who do not thoroughly understand them. Of these rearing is the most dangerous, as a fall over backwards often leads to fatal results to the rider. A horse may rear occasionally from fear, but it more generally proceeds from vice. Several plans and bits have been suggested to cure rearers, but all are attended with more or less danger to both horse and man. They are best left to rough-riders, and those who thoroughly understand the management of vicious horses, as nothing but time and work will cure them.

Kicking

is another dangerous vicious habit. Like rearing, it may be cured by those who thoroughly understand horses; but even when perfectly quiet and manageable in their hands, such horses are never to be trusted with less experienced persons.

Running Away

is another very dangerous fault. It may arise from vice or from the horse having been at some time very seriously alarmed. In the former case, a very sharp bit and great care may prevent it; but in the latter, when the horse again becomes alarmed, nothing will stop him, as he is for the time in a state of madness.

Bucking or Plunging

is another dangerous habit. Sometimes it arises from vice and sometimes only from freshness, the horse being above himself from want of work; in the latter case it is soon cured by putting him to daily steady work.

Jibbing

either in saddle or harness is a very dangerous vice, and is always the result of bad temper. In saddle the horse rears, kicks, and rubs the rider against anything in his way. He will go anywhere and rush

anywhere but in the direction in which he is wanted to go. A good thrashing will sometimes cure him, but it is not always easy to do it, as the horse invariably jibs in the most awkward and dangerous places in which to fight him. In harness the jibber will not start, he runs back, and if whipped or punished will plunge and throw himself down. Such animals are quite unfitted for private use.

Shying.

This bad habit may arise from timidity, defective eyesight, or bad temper. If from timidity it can only be overcome by gentle usage and allowing the horse to pass the object without taking any notice of his fear beyond patting and encouraging him ; to chastise him is worse than useless and senseless. If it arise from defective vision, it will be incurable, as it will be impossible for the animal to see objects otherwise than through a distorted medium. If it arise from vice, which is frequently the case, the horse must be made firmly but temperately to pass the object at which he shies ; having passed it, continue the ride, do not return and pass it again and again, as that only irritates him, and when he finds he is mastered, he will daily improve.

Most of the above defects and vicious habits, if not absolutely caused by bad and injudicious treatment and breaking, are often increased by it ; nor is this to be wondered at, when we consider the class of men who are generally employed to break young horses, their roughness, ignorance, and often drunkenness. They break them all in the same way without any reference to their different and peculiar tempers and dispositions, whereas a little care and thought would check and frequently prevent faults and defects, which, in some cases, become incurable and highly dangerous, and render the horse comparatively unsaleable.

There are many other minor faults, too numerous to mention here, most of which are capable of cure, or, at any rate, of great amelioration in the hands of a good horseman or coachman, but the less experienced will do well to purchase only such horses as are steady and suitable for their work.

HARNESS FOR SADDLE HORSES.

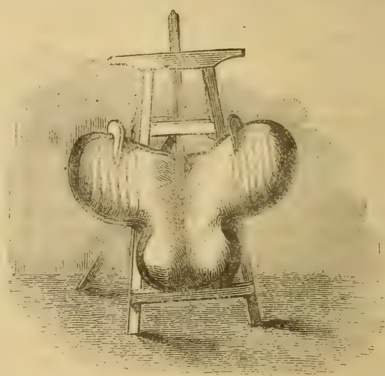
These consist of saddles, bridles, breast-plates and martingales.

Saddles may be had of almost any size or weight, to suit the rider, one of twelve or fourteen pounds is about the average weight. They may be made with either plain or padded flaps, according to the seat and fancy of the rider. Some prefer the former, and others the latter. For the generality of riders there cannot be a doubt that the padded flaps are by far the better, as they keep the knee more steadily in the proper place, prevent the leg flying backwards and forwards if the horse jumps or plunges ; while in hunting they are of a very material assistance in taking a drop jump, and also in steadying and recovering a horse when blundering or falling at a fence. The plain flaps have perhaps a smarter appearance, and a clever horseman may be able to ride as well on them as on the padded flaps, but that is almost all that can be said for them.

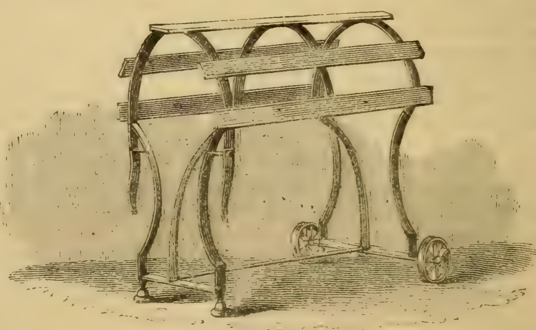
The saddle should be of sufficient length and breadth that the weight of the rider may be pretty equally distributed over it, or the back of the horse will suffer, and saddle galls be the result. Every hunting and riding

man knows, from experience, how difficult and tedious it is to get a back right after being once galled.

The stirrups should not be small, for, in the event of a fall, the foot is more likely to hang in them. All well-made saddles have spring bars, which should be occasionally oiled, that they may work easily, and release the stirrup-leather should such an accident occur. The stirrup-leather should be of the best, close and strong, not too heavy, or it will look clumsy.



Every saddle requires two girths—which may either be of the ordinary kind of the same width, with a buckle at each end, or one broad with two buckles at each end, which is put on first, and a second, about half the width only, over it, with one buckle at each end. The latter, called the Fitzwilliam girth, is the better and stronger for hunting.



After use, the lining of the saddle must be thoroughly dried in the sun, or before the fire, and then well brushed, which will keep it soft and clean. This is particularly necessary with side-saddles. It is for want of this care and attention that so many horses have sore backs. When dirty, the saddle must be sponged clean, but not made more wet than is absolutely necessary; after which, a little soft soap rubbed on will preserve the leather soft and pliable, and prevent it cracking.

In choosing a saddle, go to a first-rate maker; he may be a little more expensive, but you will get a good article, that will wear three times as long as an inferior one, will fit the generality of horses, will never get out of form, and will look well to the last. The price, complete, will be about 6 guineas; that of a side-saddle, about 10 guineas.

The Breast-plate or Hunting-plate

is used to keep the saddle in its place when hunting. It is also of great service on horses with short back-ribs, to prevent the saddle working

back, which it is very likely to do. Both on the road and in the field no lady should ride without one, as it will keep the side-saddle securely in its place, and prevent it turning round should the girths get loosened, or one break.

The Martingale

is used to steady the horse's head, and keep it in its proper place.

It is generally used on loose weak-necked horses, and though of service in the hands of the experienced, it is often dangerous when used by others, as being apt to catch on the bit or buckles of the bridle, and so cause serious accidents.

The Bridle.

There is a great variety of bits suitable for different descriptions and tempers of horses, but it is impossible to describe them all in so limited a space. They all belong to one of two classes—the snaffle or the curb, and are of different degrees of severity and power.

The snaffle is a piece of steel with a joint in the middle ; it may be smooth and plain, twisted, or double-jointed. The smooth snaffle is the mildest form of bit there is, and, except just for exercise, few horses ride pleasantly in one. The twisted bit is sharper, and if drawn quickly backwards and forwards through the mouth is very punishing. The double-jointed is the most severe ; it is formed of two plain snaffles one above the other ; but the joints in each not being opposite each other, cause a sharper and more narrow pressure on the tongue and lower jaw. Very few horses ride well and pleasantly in a snaffle of any kind, as they all cause a horse to raise his head and open his mouth, to take the pressure off his tongue. In addition to these there are the chain-snaffle, which is a very light bit, and the gag, used for horses that get their heads down.

The curb-bit is a lever that, by means of a curb-chain, acts upon the lower jaw, and may be made very easy or very severe according to the length of the cheek or leverage, and the height of the port or arch in the centre of the mouth-piece. It is very seldom used singly, but in conjunction with some kind of snaffle, when it forms a double-rein bridle, and is by far the most useful bit. All horses go better in it, when properly handled, than in any other, as by lengthening or shortening the curb-chain, and taking up or dropping the bit in the mouth, it can be made either less or more severe, to suit most horses.

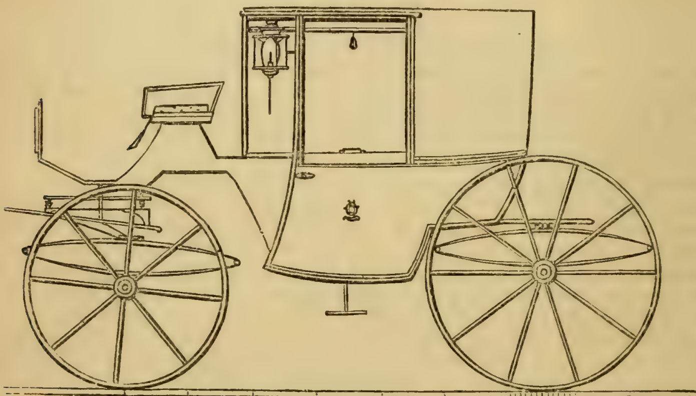
The Pelham is a curb and snaffle in one ; it is a curb-bit with a joint in the middle, instead of a port. It forms a double-rein bridle, and is very light and easy.

The Hanoverian is of the same description, but with a port and a joint on each side of it. The mouth-piece is covered with small rollers. This forms a double-rein bridle of great power and severity, requiring great care and judgment.

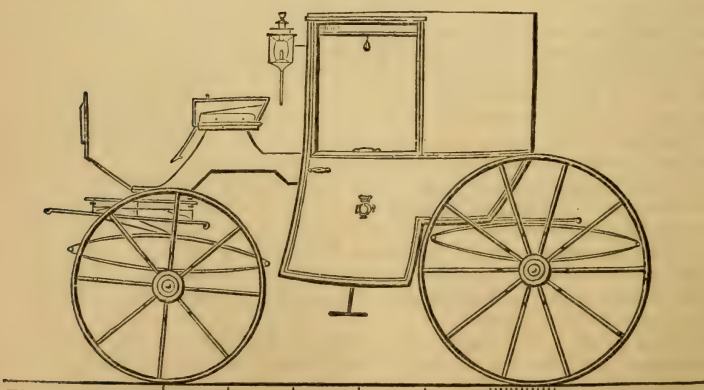
Like saddles, the bridles should be of first-rate material and workmanship ; the bits sewn on to the head-pieces and reins, as being much neater and lighter than the buckles. The leather must be kept clean and pliable with soft soap, and the bits clean and bright with silver-sand and oil. Price of a snaffle bridle about 20*s*., and of a double-rein bridle 28*s*. to 30*s*., according to the sort of bit required.

MODERN CARRIAGES

are of various sorts and sizes, from the small pony-chaise to the heavy family coach or landau. They should be made of the very best materials and purchased of first-rate builders, to ensure wearing well. Nothing looks much worse than any carriage of a cheap, common description. They are badly made, badly hung, and badly painted, and consequently soon wear out. If wanted to be sold, no one cares to buy them except for a very trifling sum; while any carriage by a first-rate maker will always look and wear well as long as it will hold together, and will fetch a good price if offered for sale.



The Double Brougham.



The Single Brougham.

Except in the country and by elderly people, the heavy coach and landau are now seldom used, being superseded by carriages of a lighter and more elegant description.

Double Broughams

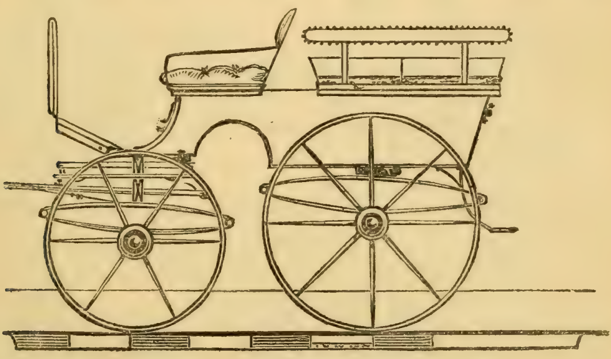
are generally drawn by a pair of horses; they have two seats and hold four inside, but are more comfortable with three. They vary in size, some being larger and heavier than others; average price 200*l*., according to style, finish, &c.

Single Broughams

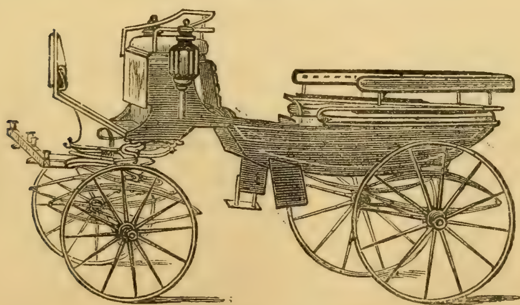
have but one seat and hold two inside; they may be drawn by either one horse or two smaller ones. When really well appointed they are very stylish carriages. Average price 160*l*.

The Waggonette

is an open carriage opening behind with a door; it will hold either four or six. If generally full it will require a pair of horses to draw it comfort



The Waggonette.



The Canoe Waggonette.

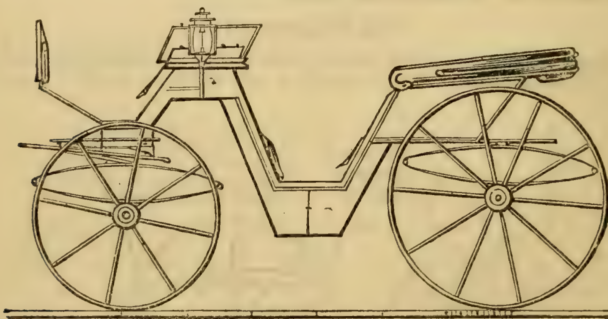
ably. It is a useful family carriage, and is often made with a hood to take on and off to suit all weathers. Price from 80*l.* to 100*l.*, according to size, &c.

The Canoe Waggonette

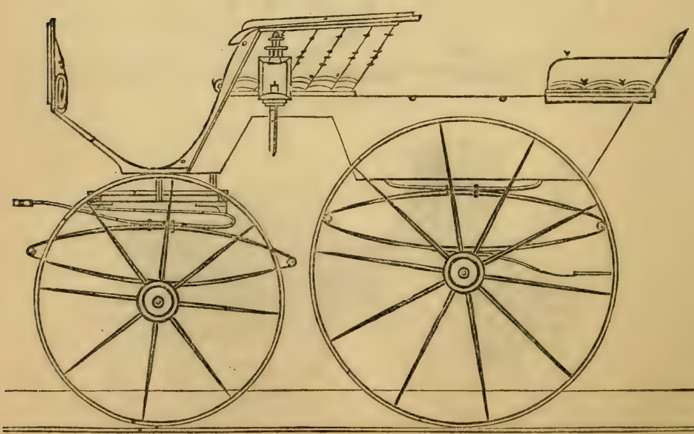
is a variation of that in general use. The entrance is on each side behind the box, it will hold six, who sit in a semicircle round the back from one door to the other. It is a comfortable carriage, but does not seem to take with the public.

The Victoria

is the most modern and stylish of all light open carriages. They are intended to carry two only, but are occasionally made on a larger scale,



The Victoria.



The Park-driving Phaeton.

with two seats, to carry four. In the latter case they require a pair of horses. Price from 120*l.* to 150*l.*

The Park-driving Phaeton

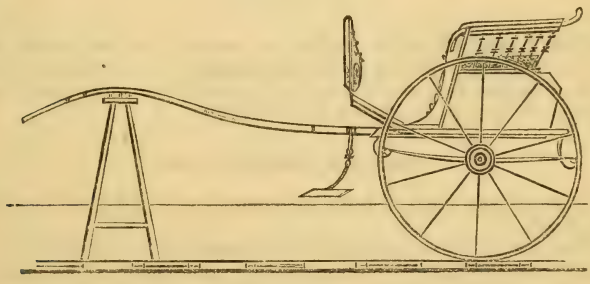
or T cart is a light and stylish carriage for one or two horses. It is very fashionable, and has quite superseded the old buggy and gig in general use, as being safer in case the horse slips and falls. Price from 100*l.* to 120*l.*

The Skeleton Phaeton

is the lightest four-wheel carriage there is; it is not often used except where great lightness is required. To look well it must be very neatly and stylishly built. Price about 60*l.*

The Gig,

or Buggy, as it is generally called, is a two-wheeled carriage for one



The Gig.

horse. Of late years they have gone very much out of fashion, particularly in town, but are still used in the country. Price about 60*l.*

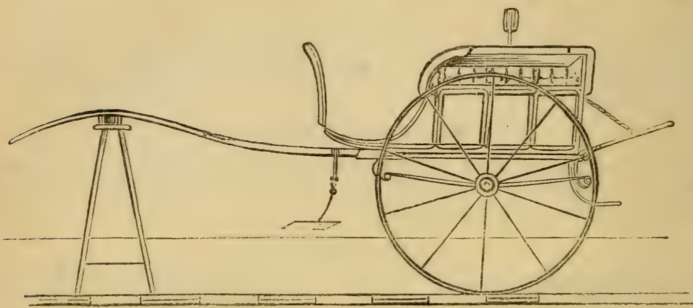
The Dog Cart

is a two-wheeled carriage, to carry either two or four; the seats are placed back to back. They are very useful in the country to take a party to cover, or on shooting and fishing excursions, as they are strong, have a large boot for dogs, guns, and fishing tackle, and follow well. They require to be very nicely hung and properly balanced or they are very uncomfortable, particularly in the back seat. Price 60*l.* to 80*l.*

There are many other sorts and descriptions of carriages for horses and ponies, from the cheap basket carriage at 20*l.* up to almost any price.

All carriages should be washed as soon as they come in from use and while the dirt is wet, as, if allowed to dry on, the paint and varnish soon become scratched and worn, as few coachmen will take the trouble thoroughly to wet the mud again before trying to remove it, which seriously injures the carriage, by taking all the gloss off the paint, &c.

The dirt must first be well washed off every part of the carriage with plenty of water; the whole should then be dried with a sponge and leather, then any plate or brass should be wiped dry and clean, but need not be



The Dog-cart.

polished until just before the carriage is required for use, as it will get dull or tarnished by standing in the coachhouse. The inside and cushions should also be brushed, and if the coachhouse be damp the latter must be taken into the harness-room and be kept dry.

Cleaning Harness, &c.

Both single and double harness should be of the best leather and workmanship.

The harness for carriage horses of all sorts is too well known to need repetition here; the only difference is that some prefer it very neat, and only use what is absolutely necessary, while others like it covered with plate or brass, and use as much as they can possibly get on the horse. The price will vary according to the amount of plate or brass-work on it. A set of single harness will cost from 12*l.* to 16*l.*, or even more; and a set of double harness from 25*l.* to 35*l.* Care must always be taken that the collars are deep enough, otherwise the horse's shoulders will suffer. The proper way to fit a collar is to hold the horse's head up as high as he usually carries it when going, and then leave room to put the hand in comfortably.

Many horses, particularly those defective in the wind, go better in a pipe collar. On coming in from use, the bits, terrets, &c., should first be removed, then the harness, if dirty, should be carefully washed clean, but not made more wet than is absolutely necessary, then dried in the harness-room, but not put near the fire; when dry it should be thoroughly done over with some harness paste or polish, and well brushed bright. The bits and terrets, &c., are also cleaned and polished and everything is ready for use.

Duties.—The duty on every horse is 10*s.* 6*d.*; on every carriage with four wheels, 2*l.* 2*s.*; on every carriage with two wheels, 15*s.*; on every man-servant, 15*s.*

THE DAIRY.

Observations on the Dairy.—A dairy of cows, when well selected and managed, is no doubt a source of profitable employment where there is plenty of provision and accommodation for such stock : particular attention, however, to everything relating to their food, shelter, treatment, and the management of their produce in the dairy, is necessary to ensure success. The master's eye wants to be often looking on, to see that all persons employed are kindly disposed, and conduct their work in a regular, cleanly, and orderly manner. Unkind treatment, improper or irregular feeding, or unskilful milking of cows, would either of them be detrimental to the success of the undertaking.

Situation, and how built.—A building for a dairy should be situated in a shady place, out of the reach of impure air, and have a northern or eastern aspect. If built with bricks and covered with tiles, the walls should be not less than nine inches thick, if fourteen inches it would be better ; the roof should be ceiled, and the windows latticed, glazed, and provided with sliding inside shutters for keeping out excessive heat or cold, otherwise the proper temperature of the dairy cannot be regulated in summer or winter.

Supposing a dairy to be built for a dozen cows, it would be necessary to divide it into three rooms, two below and one above—viz., the milk-room or dairy, the wash-house, and the cheese chamber. The dairy for milk alone ; the other lower room for butter and cheesemaking, and for washing and scalding the dairy utensils ; the upper chamber for cheeses.

Ventilation.—It would be as well to have two or three air-bricks inserted in the northern wall of the milk-room some distance apart, about a foot from the ground, and the same number in the opposite side wall, about a foot from the ceiling. If the north side air-bricks were left open during the summer months, it would be found that a current of cool air would come in and lessen the temperature, as the warm air would ascend and pass through the upper air-bricks. In the winter all the air-bricks should be closed, as quite sufficient ventilation could be obtained from the windows.

Size.—The size of the milk-room should not be less than fifteen feet square, and the other room quite as large, with chimney and copper placed at a distance from the dairy or milk-room ; and it would be best if entered by a passage, and if the door were placed so that it did not open into the milk-room, as the heat and steam should be entirely excluded. The floor of both rooms should be paved with bricks or flags, with a slight incline towards the drain, which might either run down the centre, or be placed at one side. The water must either be laid on or the wash-house provided with a pump.

Shelving.—Wide shelves about thirty inches from the floor would be required to hold full double the number of milk-pans that there are cows

besides shelves for cream-pots, pans, and other articles belonging to the dairy.

Utensils.—The utensils required where butter and cheese are made are a churn, a butter-stand, milk pans, pails, bowls, strainers, coolers, dishes, cheese-tubs, vats, girth butter-boards, markers, brushes, cloths, presses, thermometer and weighing machine, and sundry pots and pans, the cost of which would be about 20*l.*

Cleanliness.—A scrupulous attention to cleanliness is absolutely necessary. All the pots and pans, and indeed everything that comes into contact with milk, butter, cream, or cheese, must first be well washed, scrubbed, and rinsed with cold water, and scalded before using a second time; for unless the strictest cleanliness be practised, the produce of the dairy cannot be good.

Different kinds of Cows.

The large kinds of cows are generally chosen where there are rich fertile pastures; and no doubt the dominant breed throughout the country, both for indoor and outdoor feeding, is the Shorthorn. This breed is divided into several varieties—the Holderness, Northumberland, Durham, Yorkshire, &c. The Yorkshire is thought to be the best for the dairy. These fine animals appear to have descended from the Teeswater breed. There are a great many varieties of the large cows in this country that have been bred by Shorthorn bulls. An excellent cross is common in the Eastern Counties between the best Suffolk cows and Shorthorn animals of the best blood. They are good milkers, harmless, and very quiet, and consequently much approved of for pasture feeding. Cows of this breed will produce from ten to twelve pounds of butter per week each, when well managed; and for butter dairying the quantity and quality of cream produced is of greater importance than the quantity of milk.

Cheshire Cows.—The Cheshire dairy farms are mostly stocked with a mixed breed of cows, between the Cheshire, Lancashire, and other crosses.

Lancashire.—The Lancashire are distinguished by their long horns, deep fore-quarters, and long hair. They, as well as other long-horned cows, are said to give richer milk than polled cows, but not so much of it. Besides the milking properties of a breed of cows, their hardy qualities must be thought of, where they are exposed to bleak situations; and no doubt the long-horned Lancashire and other coarse-skinned animals are the most hardy.

Devons.—The middle-horned breed of cows may include the Devons, the Herefords, and the Sussex. The two latter are the largest, but neither of them excel the best Shorthorn in their produce of milk. The Devons are of a light-red colour, with yellowish coloured horns, well made, and their milk is rich—or we should not have such rich Devonshire cream. Many gentlemen prefer this breed for a herd in their parks.

Hereford.—The Hereford, next in size to the Shorthorn breed, is a fine animal and a pretty good one for dairy stock, but better perhaps for fattening purposes. The Sussex do not differ much from the Hereford; they are both of a darker colour than the Devons, with horns of a moderate length, turning up at the points, having wide hips and smallish bones. They are middling cows for the dairy.

Galloway.—The polled Galloways are very nice animals for grazing purposes; they are mostly black, well proportioned in form, and yield an average quantity of milk, when carefully used, for dairy purposes.

Highland.—The Highland are not thought to be better milk producers than the Galloways, but more hardy.

Ayrshire.—The Ayrshire cow is a favourite in some places, but not preferred by cow-keepers in general. It is, however, a good animal for the dairy, and almost equal to the Alderney in the richness of its milk. It has fine wrinkled horns, is larger than the Alderney and somewhat like it in appearance. Its colour is usually red and white.

Shetland.—The Shetland cattle are very small, and inferior in shape to those of the Western Highlands. They are hardy, small consumers of food, and yield about two quarts of milk a day.

Welsh.—The Pembrokeshire cow is small and hardy. It is fine boned, with clean light head and neck, small yellow horn, good chine, long round barrel, thin thigh and short fine legs, always in good condition if tolerably kept, and has a rich wave in her hair which ever denotes thriftiness of kind. Its produce is from five to seven pounds of butter a week during the dairy season.

Irish.—The Kerry cattle, in size and shape, resemble some of those from the Western Islands, of a high bred deer-like shape, not so broad or so low in the leg as the native Highland Stots. These cattle are very hardy, being reared in a country of rocks and hills. Their properties are said to be that of giving the largest quantity of milk, which is also of the richest quality for the amount of sustenance they require.

Alderney.—The little Alderney cow is a slender made animal, not very well shaped, though admired for its deer-like mild face and fine bone, it is mostly of a red and white colour with a mottled face. The Alderney gives the richest milk of any kind, and some of them have been known to produce ten and eleven pounds of butter a week of the finest quality. They are rather tender and require to be well housed in the winter.

Suffolk.—The Suffolk cow is believed to be the best of the polled breeds for the dairy where the pastures are not very rich. They are quiet, hardy, and suitable for upland fields. It is thought that the Dun coloured originally descended from the Galloway; they do not, however, generally appear to be so uniformly well-shaped as the Galloway, although they have been vastly improved of late years by careful breeders. Various crosses between them and the Ayrshire, and other varieties, have increased the produce of the dairy in many places; but it is believed that for large dairies, no cross is superior to that of the Suffolk cow and the Shorthorn bull.

Whichever breed is made choice of to improve the stock, both male and female should be of the best animals. By a first-class bull a hardy well-formed and abundant milk-producing cow, is almost sure to produce valuable calves to bring up for the future supply of the dairy.

Price.—The price given of late years for the live-stock of first-class breeders, has been enormous, hundreds and even thousands of pounds have been given for a single animal. It would not, however, answer the purpose of those who only keep a dairy for profit to purchase very high priced stock. Good cows may be obtained of the large breeds, which a

few years ago cost 20*l.*, for about 28*l.* now, and there is the same difference, or nearly 30 per cent., in the price of all breeds of milch cows.

Cost of Keep.—Cows are large consumers of food and should not be stinted when in milk. Heifers will require nothing but green food in the dry summer months; but as the winter approaches they should be sheltered in a yard at night, and a little fresh barley or oat straw given them in their cribs; whenever the pastures become injured by frost, both young and old cows require improved food in their sheds. A few swedish-turnips or mangold roots should then be given them, which, if pulped and mixed with sweet chaff (one-fourth hay), would be sufficient to keep them in healthy condition; but this applies only to those that are not in milk. When within two months of calving, all cows should be dried, for if not then dried they will not produce so much milk the next year. They should afterwards have their food improved by an additional weight of roots with their chaff, which should be mixed in a heap over night. By the morning it will be found to have heated a little, which imparts a flavour that is much relished by the cows.

Consumption of Food.—As was before remarked, "cows are large consumers of food," and no wonder that they should require an abundance, to enable them to supply so rich a sustenance for mankind, as well as to support themselves. Where there are no good dry pastures to provide them with plenty for their summer keep, they would do very well in a proper feeding-house (enclosed on the north and south sides) with a door at each end, if they were liberally supplied with green food, cut for them and put in racks; such as rye grass, clover, tares, lucerne, or saintfoin. The two last grow best on chalky soils. Italian grass would be fit to cut first in the spring. It has been found that milk as abundant and butter quite as good have been produced by cows so fed, as by those which had the run of rich pastures. But where there are pastures it would be well to have the cows housed in hot weather, when insects are troublesome; or else they will be worried and heated and unable to feed, and will fall off in their produce of milk.

Coarse grass in low meadows is thought by some people to be proper food for milch cows, but it has not been found that the quantity or quality of milk produced by cows so fed is equal to that of those which are fed on good pasture of a less aqueous quality.

A large cow will consume a cwt. of green food per day, which could not be valued at less than sixpence or eightpence. The general charge for pasturage is from 3*s.* 6*d.* to 4*s.* a week each.

When green food is scarce, as it is sometimes at the end of a dry summer, a little linseed-cake or bean-meal, mixed with cut chaff (one third hay) should be given them to keep up the produce of milk, lest part of the best season for dairying should be lost by its failure.

It is not good economy to feed cows on much uncut hay, for they would consume and spoil a cwt. a day, if fed entirely on it; which at the rate of 4*l.* a ton would cost 14*s.* a week; neither is it found that any of the advertised condiments are worth their cost. Much less expensive and more natural condiments can be made by a mixture of bean, barley, maize, or linseed meal, and other produce of the soil, by cow-keepers themselves.

Milk Dairies.—When cows are kept only for the purpose of producing

a large quantity of milk, brewers' grains are given them, with a small portion of hay, for ruminating purposes. On this they do tolerably well, but it will be found to their advantage if about three or four pounds of bean-meal be mixed with the grains for each cow per day.

Winter Food.—In winter and spring, Swedish turnips, mangold, and other root crops would be found more economical food than the grains, meal, and hay last mentioned. A bushel of pulped roots mixed with about fourteen pounds of cut chaff, one-third hay, and given them twice a day, would be found sufficient to satisfy a moderate-sized cow, but they should not be stinted or confined to any quantity if they are found to require more. Cabbages, carrots, and parsnips are very good food for milch cows if given in moderate quantities with other food. It is important that all roots should be freed from earth before pulping, or given to the cows, otherwise it would impart an unpleasant flavour to the cream. When cows are fed on pulped roots, with cut chaff, a peck or two of malt-dust ("combs") would be a nice addition, as it would give a zest to the mixture. A sufficient quantity for the whole herd should be put into a heap about twelve hours before it would be wanted, when it would be found to have acquired a little warmth and a fragrant smell, which would give the cows a greater relish for it.

A change of green or succulent food appears to promote the secretions of the system, and to give stimulus to their action. Such as would injure the flavour of milk should be avoided. White turnips and cabbages will do this, if given without a good supply of other food with them.

London cow-keepers do not usually keep their cows longer than they continue to give milk, but when they have been milked seven or eight months, and their milk falls off, they give them an increase of fattening food till they are quite dry, when they will have become fat and fit for the butcher, and fresh ones are bought to take their places. The best milkers are, however, in many cases kept to come in another year, if they can be accommodated with the run of a strawyard or pasture; where they might remain if sheltered from inclement weather, till near the time of their calving.

Weaning Calves.—Where there is accommodation for rearing young cow stock, the best males and females should be selected for propagating a good breed. It would not do, however, for those who expect to make a profit by dairy-farming, to purchase animals at the fabulous prices of hundreds and thousands of pounds, such as we read of at the sales of first-class breeders. Very excellent animals can be found now of various breeds, and calves chosen from the best of them, though not very high in price, will be as good for dairy purposes as the most celebrated stock. A selection should be carefully made from mothers which are the best milkers, with full-size udders, wide rounded hips, straight backs, and broad chests, with small tapering legs; and bulls with broad breast, projecting a little before their legs, with neck rising from their shoulders, moderate-size heads, flat broad straight backs, well filled up behind their shoulders and between their ribs and hips, with small straight legs and rounded bodies. Large sunken bodies are generally brought on by poor keep. Animals kept on straw and sedgy meadows only, while young, are usually disfigured by their bodies becoming unnaturally protruded.

Watchfulness required.—When cows are expected to calve (at the end of forty weeks) they should be carefully watched night and day, and where the weaning of the calf is intended, it would be best for them to calve at the end of February or the beginning of March, as they would then have the whole of the grass season before them. Calves will soon learn to drink from a pail; but it is generally thought best to allow them to suck from their mothers for a few days, while the herdsman milks on the opposite side. The cow will give down her milk the better for it, and become reconciled to his milking her without the calf afterwards, if treated with gentle kindness.

The calf should have new milk for a fortnight twice a day; then skimmed milk mixed with oatmeal or linseed meal, boiled for half an hour, during another fortnight or three weeks. It will require about two gallons a day till it begins to eat well, which it will do when it is five or six weeks old, if some sweet hay be given it daily, or some hay chaff with pulped mangold or swedes mixed with it. Skimmed milk, or whey mixed with a little linseed meal, will then do for its drink, which may be continued till it is twelve weeks old, when it would live very well on a pasture or on natural food. Some people wean calves almost entirely on linseed tea.

Summer Treatment.—When the weather is warm, and the flies become troublesome, they ought not to be left in their pasture without shade or shelter. If well shaded during the heat of the day, and supplied with pure water and some green food in their cribs, they will most likely continue to thrive; but if left to be tormented with flies, huddled together in a corner of their pasture, or in a wet ditch, they will probably become unhealthy. It may here be remarked that on first leaving the cow-house, the calf should be confined in a safe place in the yard or elsewhere for a day or two, until it becomes accustomed to the bright light of day, as on its first introduction it appears almost blind, and would be likely to run into danger.

A change of pasture now and then is desirable, but calves should not be put into low wet meadows, as it is generally in such situations that they get diseased with a husky cough.* As the autumn approaches the grass will be less nutritious, it will then be necessary to give them some food in their yard or shed, such as pulped roots mixed with cut straw chaff, every night. A little salt mixed with their chaff is a good thing, and is believed by some people to prevent "hove."

When frost begins they should not be turned into their pasture till nine or ten o'clock, or till it disappears. Their racks, cribs, and mangers, or whatever they feed or drink from, should constantly be kept clean, and the herdsman should be urged to feed and water them regularly, and to keep them well supplied with dry bedding.

As winter approaches they would be best confined to the yard, where, if well sheltered and fed regularly with a proper quantity of pulped roots, turnips, or mangold, mixed with sweet straw chaff sprinkled with a little salt, they will thrive fast enough till the spring, when they can return to their pastures, or be provided with green food; they should be carefully treated as before recommended. The upland pastures are best for young stock.

---

* Called hove or hoove. *See* "Diseases of Cows."

Some people allow heifers to have calves when only two years old, but they seldom (if ever) make such good cows as those that are left free till they are three years of age.

Young stock brought up as here recommended will generally thrive fast, and be free from disease.

Diseases of Cows.

It is indispensably necessary to have a vigilant experienced herdsman at the time that cows are expected to calve. Many a young heifer has been spoiled for want of attention at this critical period. When their time of forty weeks has expired they should be watched night and day, no matter whether old or young.*

They ought not to have been kept in too high condition, as in such cases they would be subject to milk or puerperal fever; especially if they should calve in hot weather, or have a protracted labour.

When fever comes on they generally refuse food, and are restless, and their udders become hard and distended. To prevent this, in hot weather and when cows are in too fat a condition, it would be best to have them bled about a week or ten days before the time they are expected to calve, and also give them a dose or two of Epsom salts. About five pints of blood may be taken from a large cow, and four from a smaller; and the Epsom salts should be given in one pound doses, and thoroughly melted, with an ounce or two of ginger. Probably it would be best to give one dose a few days before calving, and the other a few days after.

When this fever comes on, the udders become hard and glutted, and one quarter of the udder is generally worse than the others, and becomes inflamed with garget. This can be subdued only by an early stripping of the milk from the quarter, and by a very frequent bathing and rubbing with warm water and soft soap. Want of proper attention during this state occasions the affected quarter to become hard and useless ever after.

Cows are often injured by unskilful treatment when the period of their gestation has arrived. They should then be placed in a warm, clean, and well-ventilated cow-house or shed, moderately fed, and well watched, and if all is right they should be left undisturbed; but if difficulties should arise, the veterinary surgeon should immediately be sent for, and his practical skill will usually overcome them.

Hove or Hoove.—The disease called Hove or Hoove is said to arise

* This necessity has been experienced in several cases by the writer. A few years ago, when cows were cheap, 12*l.* were offered for a small but pretty heifer About four or five days before she was expected to calve a cold wind set in, and being in an exposed situation in the farmyard, she took cold and had garget. In administering a dose of salts the herdsman choked her, so that she died. During a cold wintry day, in the early spring of this year, the cows were put into a meadow. As was supposed, one of them was about to calve and was driven home, and the veterinary surgeon sent for. On his arrival he found the event had taken place, and on sending the herdsman into the meadow the calf was discovered —of course dead. They should neither of them have been out of their cow-house at the time. Both heifer and calf were lost through carelessness.

from forcing cattle on too fast, by giving them too rich succulent food; but as we see as many (if not more) poor fed animals affected by the complaint, it is generally believed to be caused by bringing them up in low, undrained meadows, where they get coarse sedgy food without shelter, after having been half starved with cold and inferior food during the winter.

Lime water and turpentine are said to be a cure for this disease, which at first seems only to affect the windpipe, but when the insects which are the cause of it have reached the lungs, no remedy can be depended on.

Cattle are believed to be infested by these insects while in their winged, mature state, in low marshy grounds. They are first attacked in the nostril when they inhale their eggs; but however this may be, one thing is certain, namely, that animals are less likely to become diseased if kept on well-drained upland pastures and in good condition.

Pleuro-pneumonia has been a fatal disease among many herds of cattle. It is dreadfully infectious, and an immense number of valuable animals have been destroyed by its ravages. If the disease be discovered to prevail in the neighbourhood of healthy cattle, they should not be removed, but kept at home; and should any of them show the least symptom of fever or disease, they should have a seton in the dewlaps of their chest. This is believed to divert the inflammation from their lungs by bringing on a copious discharge from their chests. For all lung disease it is safest to employ veterinary skill.

Casualties.—It is common for cattle to get choked when feeding on cut turnips or other roots. This is occasioned by the lodgment of a piece in their throat or gullet which has not been properly masticated. It can sometimes be removed by pressing it forward with the fingers and thumb. The safest plan, however, would be for the herdsman to keep a proper tube by him which is made for that purpose and covered with leather. It is also used to enable cattle to expel wind from their stomachs when they are blown by an accumulation of it. This latter cross event is very dangerous. It is generally brought on by feeding too greedily when first turned into new luscious food, such as coleworts, clover, tares, &c. The ruminating process being stopped (because the animal cannot expel the accumulation of half masticated food fast enough), wind increases rapidly till it becomes so distressed by the distension of its stomach that unless speedily relieved it soon dies.

Remedy for Wind.—A pint of linseed oil generally succeeds in forcing a passage into the stomach and in enabling the beast to expel the wind.

In some extreme cases where no other remedy was at hand, a penknife has been thrust between their ribs into the stomach. This puncture has had the desired effect. The wound soon healed and the poor creature's life was saved.

Very few breeders or feeders of cattle use turnip-cutters now for stall feeding. The accidents of choking and blowing seldom occur where the improved system of pulping roots is practised.

Cause of Diseases.—Ill fed and roughly used animals are subject to many diseases, which no doubt would be avoided if they were carefully fed and properly protected from cold and wet seasons. Wet lodging, poor food, and careless treatment are too generally found to be the precursors of weak and unhealthy constitutions.

Diseases of Calves.—Calves are often subject to diarrhœa when sucking or weaning. The certain remedy is to lessen the usual food and give two or three glasses of port wine and a piece of opium about the size of a pea. If necessary, you may repeat the dose the next day, and continue it till cured. Should the griping return, alter their food and relieve as before.

Young men and lads who show that they are kindly disposed and feel an interest in stock should alone be entrusted with feeding and attending to young animals. Food given them either too hot or too cold would prove very disastrous.

A disease known as garget in weaned calves arises from exposure to cold, or lying on damp ground and the want of nourishing food, and is fearfully infectious. The blood chills and mortification soon follows, unless in the early symptoms a seton in the dewlap and good nursing should restore the system to healthy action.

Foot and Mouth Disease.—This is generally discovered by cattle foaming at their mouths, becoming lame and refusing to eat their food. This complaint appears to be brought on by a slow fever. When it first appears, give each animal a pound of common salt with half a pound of Epsom salts in a quart of water, well dissolved, or for a large animal, three quarters of a pound of the latter. The next day give to each, two drms. of Chloride of Potash in their water, and continue it every day till they are well. Their mouths and feet should be washed twice a day with a solution of Blue Vitriol, one ounce to a gallon of water.

Milk.

What is milk? Men of science inform us, "that it is a connecting and intermediate substance between animals and vegetables. Almost every kind of the mammalia class has something different in the composition of its milk. That produced by the cow is well known to be the most abundant and valuable of any of them. This white opaque fluid has a slight peculiar smell and an agreeable sweetish flavour. It is composed of water, oil, sugar, curd, acetic acid, extractive, muriates of soda and potash, sulphate of potash, and phosphates of lime, magnesia and iron."

When properly set, that is, immediately after it comes from the cow, in a shallow earthenware pan, a thick unctuous yellowish substance begins to rise to the surface, which we call cream. This is skimmed off at the end of twelve or twenty-four hours, and put into an earthen pot, and after a sufficient quantity has been collected, it is churned into butter. To make cheese the milk should be heated to a certain temperature and a little rennet poured into it which will cause it to coagulate into a mass, and the curd to separate from the whey; the solid we call curd and the liquid whey. Thus milk is separated into three parts—cream, curd, and whey.

Butter is usually produced by means of beaters or fans, which are made to agitate the cream; during this process a separation takes place between what is called the butyraceous particles and the thin serous fluid. The former unites into a mass and is called butter, and the latter, butter-milk.

It is not generally known that a little hot or cold water mixed with the cream neither lessens the quantity of butter nor injures its flavour. It is merely added to assist in attaining a proper temperature for churning.

A Few General Remarks on Milk.—Milk is one of the most useful articles of food. It can be equally taken by old and young, and is very nourishing.

Milk or cream is a necessary adjunct to the breakfast table, and renders tea, coffee, or cocoa a delicious beverage, and none of our meals would be complete without butter. In some form or other milk is present. In cream, butter, or cheese, cakes, pastry, etc.

The constant demand for milk amongst all classes of society keeps up its high price, and only a small quantity can be purchased by the poor. It is, however, a luxury they generally appreciate, and they usually manage to have a little every day. They may not always be able to procure meat, but with rare exceptions they can get a little piece of butter and cheese, which give a relish to their food.

It shows God's wisdom and goodness that those things which are most necessary are most abundant.

The Dairy Maid's Duties.

Punctuality, order, and cleanliness must be observed in all dairy work.

The dairy-maid should be an early riser, for, in the summer months especially, much of her work will have to be done before breakfast. In preparing the dairy for use the walls must be whitewashed, the windows cleaned, and the shelves scrubbed with cold water and a brush kept for that purpose, and never used for the dairy utensils, and the floor nicely cleaned. Having heated the copper she must next take her best scrub-brush and thoroughly scour every part of the dairy utensils with cold water, rinsing them well, and if they are to be used for milk, cream, butter, curd, or cheese, afterwards scalding them and placing them in the rack and on shelves outside the washhouse door, for the purpose of sweetening them, as the air is a great purifier. Next carry them into the dairy and place them on the shelves conveniently for use, taking care to keep "a place for everything and everything in its place." The milk pans (earthenware preferred) may be piled in a stack and taken down as wanted.

Fuller's earth or wood ashes are sometimes used for scouring with cold water, but soap must never be used, for it would surely spoil the cream and butter.

Should the herdsman milk the cows, it is necessary to see that they are milked perfectly dry, as the richest part comes last, and the dairy-maid should be particular to have her clean pans ready to receive the milk, which must be set or emptied into them at once. Next she should rinse the pail with cold water, and scrub it, and afterwards scald it and wipe it with the dairy cloth. The dairy cloth must then be carefully washed in cold water, scalded, and hung to dry. This must be done once a day. In the evening rinse the pail with cold water and wipe it with the dairy cloth. If either the pail or cloth were neglected, it would spoil all the cream and butter.

After the milk has been standing twenty-four hours, the dairy-maid will take a skimmer and basin with a spout and proceed to skim the cream off, first loosening it round the edge with her finger. Then put in the skimmer and take up as much cream as it will hold, allowing the milk to drain off before putting it into the basin. This is repeated until all the cream has been carefully removed. As the small basin is filled,

it is transferred from time to time to the cream-pot, into which a piece of saltpetre, about the size of a nut, is dropped with the first lot of cream only, and stirred with a flat wooden stick, which is left in, as it will be required to stir the cream every time any is added. Should the cream be more than three days gathering for butter-making, it should be put into another clean pot and stirred daily as before. This process gives it ventilation and it keeps better.

The skim milk may be used for domestic purposes, bread making, puddings, &c., and the remainder (if not sold) may be given to the calves, pigs, and poultry with advantage.

After the milk pans have been emptied, they should at once be carefully washed with the scrub-brush and cold water (hot would only set the grease) and well rinsed and dried, and then put away till churning day, when they can be thoroughly done with the rest of the things, as they must be properly scalded before being used again. There are many varieties of churns, such as the barrel, box, air. The latter is the most difficult to use, as it requires the milk to be at a certain temperature, and if either hotter or colder the butter will not come. The American box churn, sold by Messrs. Burgess and Keys, is here recommended as easy to use and easy to clean.

To Churn Butter.

Fill your churn and butter stand with cold water over night. If summer time, and the weather should be very hot, rise about three or four in the morning, then skim any pans you may have ready, empty the water out of your churn and strain the cream through a clean cheese-cloth into it, till three parts full, not fuller, as if too full it would become frothy. Then gently turn your handle, lifting the lid of the churn occasionally, but oftener at first, to let out the gas, which would prevent the particles of cream from uniting into a solid mass, and occasion you much trouble by becoming frothy, when you might churn for days and perhaps never get butter at all. When you find the butter is collecting, turn the beaters slowly up and dash them suddenly down until it is in firm lumps and ready for your butter stand. Take them out, and place them in it, after having first emptied out the water and rubbed the bottom with salt and rinsed it. Strain the butter-milk through a clean cheese cloth into a pail, carefully putting the rest of the butter (if any) into the stand.

Wash it with fresh spring water, then work it with your boards and hands till all the milk is pressed out. Then shape it into pounds or pats as you may think proper, and mark it according to taste. Many pretty devices are now sold for that purpose. Before shaping it, salt it, if required, and weigh it.

In Cambridgeshire butter is made into rolls a yard long, and passed through a ring of a certain diameter, for the convenience of dividing it without weighing. In some parts it is made into pints.

Having washed your large dishes with salt and water, you carefully place each pound or pat on a dish with your boards as you finish it, and put it on a shelf in the dairy. In summer it is dropped into a pail of cold water, and left till next morning before placing on the dish.

Next with cold water and best scrub-brush you carefully wash off every particle of milk from your churn, stand, milk-pans, cream-pots, and other utensils, and scald the moveable ones in the copper (be sure not to

put enamelled ones in, or the heat will expand the outside and cause the enamel to crack); but those that are too large for that, pour boiling water into them, and let it stand in for a time; then take them out into the air and place them in the rack outside, and on the shelf and stool, till they are thoroughly sweet. Then replace them in the dairy as before.

During winter, about twenty minutes before using it pour boiling water into your churn to heat it, for if freezing it must be thoroughly warmed; but when the thermometer is above temperate, it will not require it. In very severe weather it may be necessary to churn before the kitchen fire. Churning should now be done quicker than in summer, and the butter should be shaped as soon as possible, or it will become so hard with the cold as to be difficult to work. After it is salted according to taste, weigh it and make it up at once.

Summer Temperature.—In summer it is important to keep the dairy cool; therefore it is necessary to shut the windows and shutters during the excessive heat of the day, and to open them in the evening. Washing it down with cold spring water twice a day will freshen it and assist in preserving the milk sweet.

Winter Temperature.—In winter it is desirable to keep the dairy about temperate, therefore the windows may be kept partially, and in case of frost wholly closed; if very severe the shutters must also be shut.

Necessity of providing Butter for Winter use.—Butter has of late years been an expensive article of housekeeping, and as it still keeps up its high price, it would be as well, whilst cheap and plentiful during the spring and summer, to put some down for winter use. The following receipts will be found useful:—

Salting Butter.—In salting butter the quality of the salt is of great importance. It should be of the best quality. Some persons use half an ounce of dry salt pounded fine, two drms. of sugar, and two drms. of saltpetre to every pound of butter. As a cask or large jar is filled up, every fresh quantity is carefully added to the preceding portion. Should it shrink away from the sides, melted butter may be poured round it to fill it up.

Without Salt.—Butter may be preserved without salt, by melting it very gently, without boiling; which causes the watery particles to evaporate, and the curd, which is always present in small quantities, and is a principal cause of rancidity, to fall to the bottom. The clear butter is then poured into an earthen vessel, and covered with paper and a piece of bladder tied over, to exclude the air. Butter thus prepared loses some of its flavour, but is much superior to salt butter for ordinary purposes.

All butter that is produced in this country is consumed here, and a large quantity is imported from Ireland, Holland, and other countries.

The consumption of butter in London is estimated at 15,000 to 16,000 tons yearly.

Devonshire Cream.

In Devonshire, instead of the ordinary mode of raising cream in shallow pans, it is put into a tin vessel as soon as it comes from the cow, and placed on a stove, to stand there for twelve hours, and then the stove is heated. This prevents the cream breaking, by being carried to it. The milk should be heated gradually until quite scalding, when a thick scum called "clotted cream" is thrown up, but it must not be allowed to

boil. The fire should then be put out, and the cream allowed to stand twelve hours longer, when it may be skimmed. It may then be readily made into butter by beating it by hand in a bowl.

Another mode which is followed in parts of Holland, Scotland, and Ireland, is to churn the milk and cream together, by which it is said more butter is produced.

The Cow House.

The milking or cow-house should be situated within a short distance of the dairy. If it were within a few steps it would be so much the better, as the milkers could then empty their pails into the pans while the milk was warm. The cream would then rise more quickly and more abundantly than if left to cool first. Milk is usually poured through a sieve or cheese-cloth into the pans, or else strained, before using for domestic purposes. Where it is not strained, the cream is always poured through a cheese-cloth into the churn.

Mode of Building.—The building should be at least sixteen feet wide inside, to allow good room for stalls and feeding troughs, and for comfortable room behind the cows. Their troughs should be placed three feet from the wall, so that their food could be put in on that side of the building. It should join the root-house. The floor should be paved with bricks, pretty high where the cows would stand, and sloping down to a gutter behind them. The gutter should be made with a good fall, so that no manure could remain long in it. It would be well if a cesspool could be made at a little distance to receive the drainage, so that no effluvia from it could reach the milking-house.

It would be a good plan to have the north and south walls wholly enclosed, with the exception of a door for entrance into the turnip and chaff-house, and the east and west ends fitted up with double folding-doors, in a line with that part of the floor behind the cows. By this means, if both ends were left open in the summer, a current of cool air would go through the place, and either one or the other might be closed when the cold wind came from the east or west in winter.

The calf-pens would have to be placed at each end. A few air-bricks might be put into the south wall, about four or five feet above the cows' heads, and a boarded loft over the whole building, the length of which would depend on the number of cows kept. If numerous, a row of cow-stalls (which might be double), on either side of the building, with a path down the middle for the men, would be an advantage.

The strictest cleanliness should be practised, and clean dry beds provided for the cattle when housed, and everything done that is required to make them comfortable.

It would be advisable to have the pastures near the milking-house where it is possible, for when they are fetched from a long distance they sometimes get hurried, and their milk becomes overheated. Whoever drives them should be urged to do it gently, and taught the law of kindness. Neither whips nor sticks should be used if cows are expected to yield their milk down freely. If treated with gentle kindness they will become attached to their keeper or herdsman, and will place themselves in a quiet position to be milked, even in the open field.

It is dangerous to drive cows a long distance when near the time of calving.

Hints on Milking.

Milking.—Those who milk cows should be well looked after, and in large butter and cheese making dairies some trusty person should always follow the milkers to watch their proceedings and to ascertain whether the cows have been well milked. If a cow has been ill-treated she will leave off eating, toss up her head and become restless while she is being milked. She would not give down her milk freely if she had been misused by the person who was milking, and probably several pints of milk would be retained after he had left her.

Few persons are fully aware of the great loss sustained by cowkeepers in consequence of their not employing good milkers.

It is very important indeed to ensure the certainty of having every cow well stripped for two ostensible reasons. One is that the last pint or two of the strippings is a great deal richer than that which is first milked. Analysts inform us that it is ten times as rich in butter and cheese producing qualities. But another very strong reason why cows should be thoroughly well milked is, that they will very soon fall off in the produce of their usual quantity if all their milk be not drawn from them. They will gradually produce less and less. The portion left by careless milkers seems to be absorbed into the system, and nature will continue to generate no more than what has been abstracted. If this be the case, and some milk be left every day, of course the cow soon becomes dry. Observant men have frequently noted this fact, while the owners of the herd have been unconscious of it, and have wondered why so little butter and cheese have been produced, and why it was that their cows have become dry at the end of six or seven months, while their neighbours' cows have continued to give a pretty good quantity till within two months of their calving.

It is not the usual custom to milk cows more than twice a day, but it has been found that they will give a larger quantity if milked three times.

However, it is not generally thought worth while to trouble either the servants or the cows during the middle of the day for what extra quantity could be produced by this practice.

It will appear from what has been stated, that kind treatment and clean milking are essential requisites in the management of a dairy.

Cleanliness with regard to milkers is indispensable. Their hands must be washed perfectly clean, and should the cow's udder be soiled it must be washed clean also.

If all persons employed in dairy work are clean and careful, their butter and cheese are sure to be good.

Gloucestershire Cheese.

In the month of April the process of cheese making generally begins, though it is not till after the cows are fed in good pastures that the blue mould will be on it which is a sign of richness.

One difficulty to contend against just now is the heaving of the cheese, or getting out of shape. This may sometimes be prevented by putting one pint of sour whey to forty or fifty gallons of milk and also a little saltpetre.

To the same quantity of milk put a tablespoonful of saltpetre in this way. Place it on the cloth which covers the cheese-tub underneath the sieve, and strain the milk through it. The saltpetre will then dissolve and effectually mix with the milk.

When the milk is cool enough for the rennet to be put in, which is eighty degrees as indicated by your thermometer, it should be allowed to stand for an hour without being disturbed. Then it may be cut with a knife having three blades, slowly at first, to allow of some of the whey being dripped from it. In a quarter of an hour longer, it may be broken up very small, without injuring the quality by the fat from the curd being carried off by the whey. It will then sink in a solid mass, when the whey can be more easily removed. As it is necessary to make the curd as dry as possible, it is often put into vats and placed in the press for half an hour, after which it is taken out and placed in a tub, and either crumbled to pieces with the hand or, which saves the dairymaid much labour, ground by a mill placed on the top of the tub, this latter plan being the best for regularity. It will now be put into the vats and pressed firmly. After the cheese has been in the press two hours, the wet cloth must be taken off and a dry one substituted, and the cheese turned over. When this second one is removed, if the curd be not properly closed up, a third may be used before salting. The cheese made at night should be salted as early as convenient the next morning, and that made in the morning should have the salt rubbed in at night. Thin cheeses will require three times rubbing, and thicker ones four. Four or five days in the vat will complete the process, though a longer period would be an advantage.

After taking the cheese from the vat let it be well washed in cold water to remove the brine and wiped, or it will fail to acquire that beautiful blue mould which is an indication of richness and good quality and will fetch the highest price in the market.

You may now place your cheeses in the dairy for a week, after which they may be removed to the cheese-room. Care must be taken not to place them in a draughty situation or they will invariably crack. Turn them daily, frequently changing to clean shelves. In three or four months they will be ready.

Cheddar Cheeses.

Pour the milk through a sieve into a cheese tub as it is drawn or milked in the evening. But if very hot weather, place large vessels in a tank of water, and pour it into them, to cool till morning. These are all emptied into the tub with the next morning's milk. To every hundred gallons add two to four of sour whey, providing the temperature of the night's milk is not over 64 degrees, which must be ascertained by the thermometer ; if over, no whey should be added. Heat the whole to 80 degrees either by warming the morning's milk and putting to the evening's, or by any easier process. Rennet and a pint of water in which two or three square inches of vell* has been twenty-four hours steeping, is then strained into it, at the rate of three-quarters of a pint to sixty gallons of milk. This must be thoroughly stirred in, also half an ounce of Freeman's

* Vell is the prepared stomach of a calf.

or Nicholl's liquid Annato to every fifty gallons is mixed for colouring. In an hour the curd will have come. It is next slowly cut with the curd breaker, and a few gallons of whey gently baled out and heated, and then added to the mass to raise the temperature again to 80 degrees; the whole now being stirred and broken, and then covered up for three-quarters of an hour.

Ten or twenty gallons of whey are then drawn off, and heated to about 145 or 150 degrees, and then run into the tub again, raising the heat to 100 Fahrenheit. It is covered up again for half an hour; the whey is next slowly run off until only a few gallons remain for use the next day. The curd is then heaped into the middle of the tub to drain, and left for half an hour. It is then cut up, and again left for half an hour to drain. It is then weighed, and ground through a mill, and one pound of salt to one cwt. mixed with it. When sufficiently cool, at 60°, it is vatted and put into the press. After three days it is bandaged, and placed on a shelf in the dairy for a week. It is then removed to the cheese-room, where it will require turning, daily at first, and afterwards at longer intervals, wiping it when necessary, and occasionally changing it to clean shelves.

In a month it will be ready for scraping. This is done by moistening the cheese with a wet flannel all over, and then scraping it with a knife till smooth, but leaving the edges sharp. In about three months' time it will be ready for sale.

Truckle Cheeses.

Truckle cheeses are usually made in the autumn months, after the excessive heat of summer is over; during which they are liable to heave and bulge, owing to fermentation occasioned by the hot weather.

They are made from six to nine inches deep, and about nine inches across, and are recommended as the most convenient size for the table. It is not easy to fill vats of this description, they are therefore made of small staves like a milk pail or bucket, but without bottom. A piece of board rather larger than the vat is kept at the bottom until the cheeses are turned out.

Truckle, or loaf, cheeses have a tendency to bulge at the sides, great care is therefore required in making them, for unless well made they will not retain their original shape, but lose their beauty. The quality, consequently, is easily determined by the shape. When the vat is half full, a small tablespoonful of fine salt should be put into the middle of the cheese, taking care to rub it well into the curd, but not allowing it to reach the outside, or it would make it crack. In the formation of these cheeses the curd should be made of new milk, crumbled small, and drained thoroughly before putting it into the vats, and it should be pressed in as firmly as possible with the hands. This done, they are ready for the press, where they must remain four or five days, and be turned every day and salted three times. In about twelve months they are fit for use.

Stilton Cheese.

Put the night's cream into the morning's milk with the rennet as before described. When the curd is formed it must not be broken, but taken out whole with the skimming dish, and placed in a sieve. As it drains gradual pressure should be employed till it becomes firm and dry.

It must then be placed in a hoop, and afterwards kept on a board, bound with a cheese fillet, and turned frequently.

Cream Cheese.

Take some of the curd, as in Stilton cheese, before it has become too firm, and, after draining it gently, and pressing it a little, place it on cut straws of a certain length strung together. The same quantity of straws should be placed on the top. It must be turned every day. In three or four days it is ready for the table.

Parmesan Cheese.

A moderate wood fire in a stove, adapted for the purpose and placed two feet below the surface of the ground, is made at ten o'clock in the morning, when sixty-six gallons of milk are poured into a large copper kettle suspended from a crane and placed over the fire. The contents must be stirred frequently. An hour afterwards, the milk being under blood-heat, must be still stirred and have some rennet squeezed into it through a cloth. The copper must then be turned from over the fire, and remain so till past twelve o'clock, by which time the rennet will have operated sufficiently. After being stirred up and allowed to stand for a short time, some of the whey should be taken out and the copper put over the fire again, which must be made up sufficiently to raise the materials to nearly boiling point. Colouring should be then added, viz., a quarter of an ounce of saffron. It must still be occasionally stirred and the curd frequently examined. In about an hour and half the small pieces of curd will be getting firm. When this is the case, the copper must be taken off and remain so till the curd has subsided. Part of the whey being removed, the curd, which will have become tough and adhesive, is taken up in a coarse cloth and put into a hoop and pressed for half an hour by a 56 lbs. weight. The cloth is then taken away and the cheese, left in the hoop, is then placed on a shelf. On the third day, it is sprinkled with salt, and this is repeated every second day for about six weeks. In order to facilitate the salting, two cheeses are usually placed one upon the other.

Leicester Cheese.

Put a rack across the cheese-pan or tub and pour the milk through a fine hair sieve into it. Ascertain by the thermometer that the milk is a right heat,—viz., eighty-four degrees, or the curd will not be a proper consistency. Rennet and a small quantity of water in which vell has been steeping is then strained into it in about the same proportion of that mentioned in Cheddar Cheese.

Put a cloth over it to keep up its temperature and let it stand for sixty minutes. If at the end of thirty minutes, the curd has not begun to collect at the sides of the pan, add a little more rennet. When the curd is properly come, let it be gently broken up by putting the cheese breaker slowly down and bringing it up as slowly until it has gone once round the basin or pan. The second time it may be passed round a little quicker, and the third time put the breaker in at one end and bring it up at the other, and so go round. After this process let it remain a quarter of an hour. Then the dairy-maid must kneel down and begin to collect the curd with her arms and hands before removing any of the whey: by so

doing she will be able to get it firm at the bottom. She must then draw the curd towards her which will now occupy half the pan, turn it from right to left till opposite, and then gently roll it over, bearing in mind that the weight of whey assists with the natural warmth of the arms and hands in producing the firmness required. She may then commence ladling off the whey, then cut her curd into large squares and lay them in a wicker sieve. The pan is now empty, let her put her cheese tongs across it and place the vat and cheese hoop on them. Put the large lumps of curd into this vat and lay the strainer over it, then place the strainer in the centre of the vat and commence at once to break up the curd with the hands. The dairy-maid must then take her kneeling-board, which is about five inches in width and thirteen long, and placing it over half the cheese, must kneel on it while she works the other half with her fists, moving it gradually round so that the cheese may be kneaded all over. Then she must draw the cloth straight over it corner ways, which will enable her to lay hold of both ends and swing or turn it over.

Then she must tuck the strainer round tight and knead it again as before, which will occupy half an hour. Next take the strainer off and cut the curd into four large pieces and put them into the wicker sieve. She must then dip the strainer in whey, and wring it perfectly dry. The dairy-maid must again place the tongs on the cheese pan, and put the vat on it, and cheese hoop and the strainer in the centre. She must next crumble up a third part of the cheese with her hands, pressing it for twenty minutes, then another, break it and press it as before, and lastly the remainder in the same way ; bring the corner of the straining cloth over it, regulating her hoop so as to be just on the surface. By so doing the press will accomplish all that is required. The curd is then put into the cheese-press for three hours, and when taken out the strainer is wrung. It is then salted, put in again, and left for three or four days ; after which the brine is well washed off in cold water and the cheese wiped and placed in the dairy for a week, and afterwards removed to the cheese-room.

Green Cheeses.

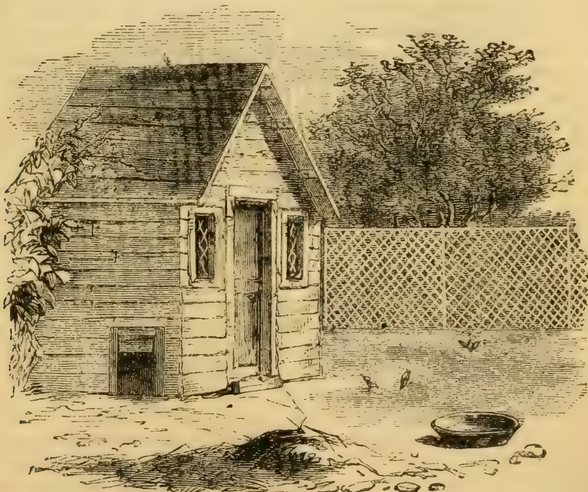
A cheese of a dozen pounds may be made as follows. Take two handfuls of sage, one of marigold leaves, and a little parsley, and then let them be well bruised and steeped in a sufficient quantity of milk. The greenish milk must be strained from the mass the next morning, and mixed with one-third the quantity to be run. This mixture and the rest of the milk are then to be run separately and the two curds kept distinct till they are ready for vatting. In mixing, the curds may either be reduced small, and blended intimately together, or the green curd may be irregularly broken, or else cut into regular shapes. The bottom and sides of the vat are then set with these fragments, interspersing the different curds with each other, according to the taste of the maker. The middle is then filled up with the promiscuous mixture, and at the top the different colours are alternately or otherwise disposed, as in the bottom and sides. The remainder of the process is the same as that for other cheeses.

THE POULTRY YARD.

THERE is no house, however small, with the very least possible piece of outlet, that may not, with a little care and trouble, indulge in the luxury of new-laid eggs, spring chickens, and fat poultry. We will try to show how, in an inexpensive manner and with ordinary care, the poultry-yard may prove a source of amusement as well as of profit.

FOWL HOUSE.

Having decided on keeping fowls, the first thing to be done is to prepare a suitable place for their habitation. Of course the size of the



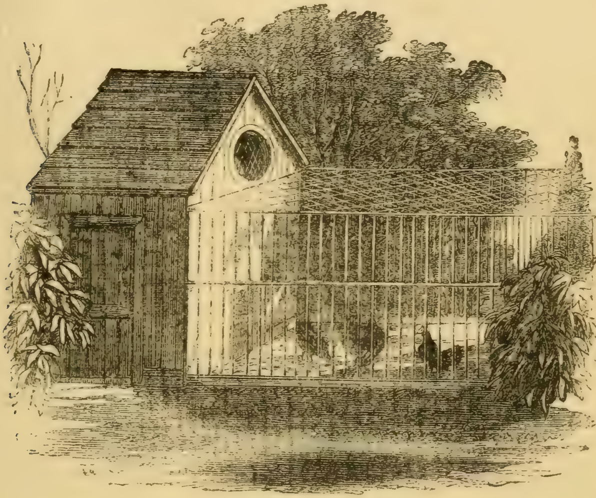
A Simple Wooden or Felt-covered Fowl House.

fowl-house must depend upon the number you purpose keeping, and the number you purpose keeping must be regulated by the space at your

command; but having decided the size to build your fowl-house, which, if possible, should have a south aspect, it is well to do so in as cheap a manner as possible. The most economical material for building is wood, the roof of the same covered with patent felt. This roofing measures thirty-two inches wide, and is 8*d.* a yard. It is water-tight, but should be placed *over* common boards, as it is apt to bag, and if water settles in the hollows it becomes rotten. It is nailed on with *hot* iron tacks heated in a frying-pan, and when it is up, it must be tarred and thickly sprinkled with sand, which should be repaired every year. In summer weather a felt-covered house is hot, therefore, if possible, it should be erected under the shadow of trees. It should be well ventilated, but you must avoid the least possibility of a draught. The floor should be perfectly dry, and the roof, like our own houses, weather-tight. Sliding-windows or air-openings should be made at either end, so as to admit air in abundance, but so situated as not to expose the fowls to a current of air or draught when they are at roost. The perches should of course be round and not too slight — perhaps about the size of a rolling-pin; and the nearer they are to the ground for the heavy description of poultry the better. Having completed the fowl-house externally, the floor must be next attended to, and as cleanliness is of most particular importance in securing your fowls in health and beauty, too much attention cannot be paid to this part. There are many opinions as to the best flooring for a fowl-house, some recommending stone and bricks: both these are too cold; others, the ground well rammed, and ashes from the dust-hole, finely sifted, strewn over it: this plan we adopted ourselves, and although it kept the feet of the fowl clean, it was a complete nest of and harbour for the insects which are so troublesome to all poultry. The best we found, after very many trials, was well-screened gravel well-beaten down; and, having a brickfield hard by, we were enabled to procure the refuse from the brick kilns thickly spread over the gravel and well rammed down also. Being thoroughly wetted during the process with good strong lime-water, it forms a description of concrete. It is of course necessary you should not mix your different varieties of fowl, otherwise you never can depend upon a pure breed, which to many is the very greatest desideratum; and to obtain that object you must adopt the following method: Necessarily you must divide your poultry-house into as many partitions as you intend to keep descriptions of poultry. These may be made of wire netting, and the run or yard divided in the same manner. Should the cocks prove troublesome and inclined to fight, boards or wire have to be used instead of netting. The whole of the run should be covered also with netting. Hatches must be made in the houses for the exit and entrance of the fowls, and these should be made to slide so that the fowls may be safely shut up at night. The greatest cleanliness must be observed both inside and outside their houses; baths should be cleaned if possible once a day—at the very least twice a week. If space allow, a sort of day-shed may be erected at the bottom of the run, made up of any description of old rubbish, but sufficiently secure to prevent their escape, in which gravel, ashes, refuse of old buildings, and old mortar pounded may be thrown, so as to enable them to seek shelter from the weather without taking refuge in their roosting-place, and where they may also peck up what is so essential to their well-doing, without

which they cannot digest their food, and where they can feather themselves.

Moveable houses are very excellent for fowls, as *new* earth is a great boon to poultry. If there is land enough to allow of a house of this kind



Bantam House for a Lawn.

being removed from time to time, the poultry will thrive all the better for it. Moveable fencing goes with these houses.

Having fixed upon the description of fowls you purpose keeping, the very greatest care must be taken in their feeding. They should have sufficient, and no more than sufficient, food, but that which they have should be good. Very many people run away with the false impression that you cannot overfeed poultry : it is a grave error to do so. In feeding fowls throw the food to them, and while they are really hungry they will run after their food with avidity. When they begin to slacken or begin to eat daintily, stop feeding them. One essential of success in poultry-keeping is an abundant supply of clean water. Fowls are very particular about it. They also, like individuals, require a change of diet : their usual food is corn and meal of every description, small potatoes boiled and given hot, mixed with boiled barley meal, pollard, cayenne pepper seeds, a little Indian corn, crusts of bread fried in fat, and any cuttings of meat that may be tainted, or the refuse from making lard, will keep them laying the whole year round. Fowls allowed to run about are naturally fond of grass and vegetables ; any refuse cabbage-leaves, lettuce, and grass-cuttings from the lawn will be most acceptable to them, and should be thrown into their run.

Having housed the fowls and described their food and the way of feeding, it is natural to look forward for some reward in the way of eggs and chickens. With proper food, such as has been recommended above, we are certain to have a good supply of the former. We will show the method as adopted by some of the best breeders to raise the latter. The first thing is to choose a hen for sitting; that is easily ascertained. When you see one of your stock ruffling her feathers, wandering about, trying to hide herself in dark corners and out-of-the-way places, and making a peculiar sort of "cluck," immediately prepare a nest for her in a quiet spot, and place there the number of eggs which she can conveniently cover. It depends entirely upon the size of the hen what number of eggs you should place in the nest. Select if possible a short-legged hen. The number of eggs will of course vary according to her size, from nine to thirteen. Should you have two hens "clucking," it is a good plan to sit them both on the same day, as when the eggs are hatched the two broods may be given over to the charge of one hen; you will then have the other in a short time laying again.

The nest must be made warm and comfortable; there must also be some degree of moisture. Some old housewives sit their hens on the ground, but damp is fatal to hatching. The most simple nest is one made of straw, well-softened by rubbing in the hands, fern or heath. You must induce the hen to leave her nest every day, and see that she has plenty of water and food, and also an opportunity of rolling herself in dust or ashes, and picking among gravel or soil. Do not interfere with her more than this, as excessive watching will disturb her. The eggs chosen for sitting should be from the newest you have; if you have enough all laid on one day, so much the better. At the expiration of twenty-one days, if all goes well, you will find your chickens hatched; if in winter, hen and chickens should be comfortably housed—an old shed will do. Place the hen under a coop; a box with one side taken out, with laths nailed in front, makes a very excellent and cheap one. Place some chicken food in front of the coop. Whilst very young they should be fed every hour, and any stale food they may have left should be removed; as they grow, the number of meals may gradually be reduced until they are fit for fattening. The best food for very young chickens is hard-boiled eggs, bread-and-milk, millet, rice (boiled), and canary seed. With the chicken as with the fowls, the greatest cleanliness must be observed, and their water-pans should be replenished two or three times a day. The best age for sitting a hen is from two to five years, and in selecting the hen you should choose one that has proved a good brooder, and keep the giddy and careless ones solely for laying. Many people select fowls as sitters that have tufts on their heads. Every year some fine young fowls should be reared, to keep up a stock of good breeders; by attending to this, and feeding bad layers and careless nurses, you will insure a good and profitable stock. Should you be inclined to sit a hen on any other description of eggs than her own, be most careful in placing her eggs as many days after the others as there is difference in the length of their sitting. Have wormwood and rue conveniently situated near your poultry-house; some of the former, boiled and sprinkled over the floor of the house, is an excellent thing. Pills made of chopped rue and butter are by some considered a panacea for all the ailments to which fowls are subject. Moisture,

as before shown, is absolutely necessary to insure success, as well as being a means of insuring quick hatching—which is of great consequence, as many chickens die from inability to escape from their shell. During wet, warm weather the eggs will not require any interference with ; but in hot, dry, parching weather, a little assistance must be given, by sprinkling the eggs during the absence of the hen, when feeding, with tepid water, and watering with a water-pot in the neighbourhood of the nest, to create a moist, steamy atmosphere. Should it be necessary to give assistance to the chick in its endeavour to quit the shell, care must be taken that the time has really arrived when assistance should be given. If on breaking away the shell the least shadow or sign of blood should be seen, stop immediately—the chicken is not ready to leave the shell ; by persisting you would most certainly cause the death of the chick. If the chick be ready to leave the shell, but unable through the dryness of the weather, and consequent hardness of it, he will assist you in your attempts to bring him into light. Do not neglect to feed your poultry regularly with good and solid food from the first. Those hens you intend to keep for laying should be fed on Indian corn-meal, and those for market or for the table should have more nourishing food. It is a great mistake to purchase what is called chicken's corn for fowls, as it is generally little more than husk, or corn so shrivelled that there is no nourishment in it. Good wholesome corn, every description of the best meal—such as barley-meal, Pollard's buckwheat, oatmeal, cayenne pepper-seeds, and greaves—made into cakes, and given hot, is one of the most fattening and flesh-making foods for poultry. Little chickens thrive best if they are given chopped nettles, with a little butter-milk thrown over them.

The following is a food on which our poultry will fatten very quickly. Put a sufficient quantity of rice to feed the fowls you wish to fatten in a saucepan, with some skimmed milk ; let it boil until the rice is perfectly swelled out, and then add a little sugar. Feed them three times a day in earthenware pans, giving them only as much as will quite fill them at once. Let the pans be washed out in spring water, that no sourness may be conveyed to the fowls, as that will prevent them fattening ; give them the milk the rice was boiled in, and clean water, to drink. By adopting this plan the flesh will have a clear whiteness, which no other food gives ; and when it is considered how far a pound of rice will go, and how much time is saved by this method, it will be found to be cheap. A little animal food mixed with vegetable food also causes poultry to fatten rapidly, but before these are killed they should for a few days have a purely vegetable diet. Another method of fattening fowls is by cramming them, which no doubt fattens them very shortly ; by this method you may have fowls ready for table or market in a fortnight, the fowls weighing from five to seven pounds. A good fattening food for fowls may be made as follows :—Mix the different meals together with boiling water ; then add suet, knead all together, and give in balls as much as will fill each fowl. By this treatment they will fatten very rapidly, and this food makes them look beautifully plump, and consequently they are eagerly sought for in the market.

We will now say a few words as to the different descriptions of fowls, pointing out which are the best layers, the best for sitting, and the best and finest for the table.

It is very hard to disabuse some people of their prejudices, and many good old-fashioned people, when you ask them what description of fowl they consider best, invariably reply, "The old barn-door." Doubtless, they are a useful sort, but in these days of progress poultry-keepers generally like to keep pace with the times ; and it is no more expense to keep fowls that will lay eggs all the year round, half as large again as the old barn-door and produce chickens in March the size nearly of a common fowl.

We will commence with the Spanish—a most elegant breed, jet black, with a white face, extending in the male bird all over the face and even under the beak. The hens of these fowls never sit, so the eggs must be placed under a common hen. There is one drawback in the Spanish breed of fowls—the chickens when young are very delicate, and greater care must be devoted to them ; they amply repay the trouble, as the hens lay larger eggs than any other kind of fowl. There are several varieties of Spanish : the white Spanish ; the red-faced white Spanish (these latter are very good layers, and commence early) ; the Minorca, a Spanish fowl, but without the white face—their eggs are large, and they will sit ; lastly, there is the Andalusian, very fine-looking fowls : these also are very good layers.

The Dorking fowl, which may easily be known from all other varieties of fowl from having five toes, is, in our opinion, one of the best fowls a poultry-breeder can possibly have. It is described as being an excellent farm-yard fowl, being a good layer, a close sitter, an attentive mother ; the chickens also grow rapidly, and are most excellent for the table. The Cochin China is also a very great favourite with poultry-feeders ; their large size, and the number of eggs the hens lay, naturally led to their becoming in great request ; it matters not how cold the weather may be, even in deep snow, and with severe frost, you may always depend upon your handsome Cochins providing you with new-laid eggs.

There is another description of fowl which no breeder should be without, and that is the Bramah Pootra ; they are good layers, their eggs are a very good size, and they make capital mothers ; of all the fowls we have ever kept, they are undoubtedly the best. If at liberty, they will almost keep themselves ; and even if confined, they thrive as well as any other fowls. They fatten quickly, and are most excellent eating ; they run to a tremendous size; when full-grown they have been known to weigh from twenty to twenty-five pounds a pair. Dr. Bennett, in describing them, says: "The cock is mostly white, with neck hackles pencilled with black, and rump hackles of the palest possible shade of straw colour ; the tail is black, with glossy green plume feathers ; the wings pencilled with black.

"The pullets are white, with black tails ; the wings and neck slightly pencilled with black, the comb is small and serrated. Very frequently they have a perfect pea-comb, which is always a rare indication of fineness of flesh. The wattles are small, but the ear lobes are extremely large and pendulous. The legs are yellow, and usually very heavily feathered, though there are some excellent specimens with smooth legs."

Another writer describes them better than they have ever been described before, and in comparing them with the Cochin China goes on to

say: "In the shape of Cochin China fowls, no one can fail to remark the absence of breast, which is indeed one characteristic, as the lack of it enables the fluffy thigh to become more apparent; and the wedge-like shape of the bird, while wide behind and tapering to the breast, forms the development of those points which constitute the chief beauties in that breed. Now in the Bramah Pootra this lack is materially supplied, inasmuch as there is a breast amply developed, and possessing a rotundity approaching, when in hand, to what game-fowl breeders and amateurs call cleverness, which is that a well-proportioned fowl, placed breast downwards on the palm of the hand, should balance. This cannot be when the breast is wanting. A lady lately imported some of these birds, and after they had been in charge of the man (who had had the care of the Cochins for years) some days, asked his opinion. 'Madam,' said he, 'these will get fat where the Cochins will starve.'" The Cochin seeks its roost early, and besets the hen-house door; the Bramah Pootra always roams far from home till almost dark. We have seen them, like rooks, following a man at the plough, and pecking in the newly turned furrows three fields from home; such a thing is seldom or never seen in others. The chickens are all hatched either black or yellow; at the age of six weeks a change takes place—the black get gradually grey, and look as if their feathers were covered with a cobweb, while the yellow become white and then speckled like a silver-pencilled Hamburg chicken. They are very hardy, less expensive to keep, and are quite as prolific in eggs as the Cochins.

MALAY.

The Malay fowl is a fine, handsome looking fowl, stands tall, and has a very upright gait. On looking at its comb, you would almost imagine it had been dubbed, as is done with game cocks; but one is led to see the necessity of this naturally dubbed comb, as there is no fowl so quarrelsome as the Malay. They have been known, when placed in front of a looking-glass, to severely injure themselves in fighting with their shadow. The chickens are, perhaps, the most ungainly looking things when young that can possibly be imagined; half fledged, for they fledge slowly, with long legs, they have the appearance of a young stork without the long bill. The pullets lay very early, and the eggs are a nice medium size and have a tinted shell. It is always advisable, if you wish to propagate the breed, to place your sitting of Malay eggs under a Dorking hen—the long legs of the Malays are very much in the way in sitting, whereas the short-legged Dorking can leave her nest without disturbing or cracking the eggs.

GAME.

The Game fowl may justly be called the pure British fowl, and there is no breed of fowl that can in any way compare with the Game in the delicacy, whiteness, and richness of flavour. How grand the Game cock looks with his gorgeous black and red plumage, proudly strutting, and yet attentively watching his female train, and, like a good soldier or citizen, always ready to protect them from harm. Some are very spiteful. We had one that took such a hatred to a servant that he could never cross the yard without a stick. On one occasion having neglected to do

so, hearing shrieks, I looked out of my dressing-room window, and then saw the cause. The cock had flown up to this tall man's throat, had firmly fixed his toes in his waistcoat, and was pecking furiously at his face. A few minutes' more delay and he might have been deprived of his eyesight. Nothing can daunt the spirit of the thoroughbred game cock, for when unable to move, and lying wounded to death, he will crow for crow with his conqueror as long as life lasts.

The hens are beautiful birds, marked in many instances exactly like a partridge. The chickens, from their earliest infancy, are pretty also, and their pugnacity is shown from the moment their combs begin to grow. The eggs have a most delicious and delicate flavour, but are, generally speaking, of a moderate size. Many people object to keeping game fowl on account of their fighting propensities, as very many instances have been known where a whole brood have been destroyed as soon as they were completely feathered, by the cocks and hens (for they fight indiscriminately) tearing each other's eyes out, stripping the skin off each other's heads ; in fact, so wounded, bruised, disfigured, and injured do they become that it has been necessary to wring their necks, so that the expectation of the breeder has been utterly disappointed, and his eggs and time in the hatching wasted.

HAMBURG.

We will now devote a short time to the different descriptions of Hamburg fowls, or more commonly called every-day layers, or everlasting layers. They are most profitable fowls to keep, as they eat little and lay incessantly. If space permit, and they be allowed to ramble, they will entirely provide for themselves. There are several varieties.

The spangled Hamburg, gold and silver. The markings on the feathers of these birds are very curious, being a black spot upon each gold or silver feather. The comb is also most peculiar in shape, a bright red-rose comb, ending in a taper spike at the back end.

The pencilled Hamburgs are indeed beautiful birds, the markings on their feathers being so minutely exact. Instead of a black spot on each feather, a regular pencilling of black appears on the gold or silver, as the variety may be either golden or silver pencilled Hamburgs.

The black Hamburg is a most attractive looking bird : brilliant jet black, with its bright red-rose comb and pointed spike, and its being, like the other breed of Hamburgs, a constant layer, will generally insure it a prominent place amongst the poultry-keeper's stock They are not a large fowl, but of a good medium size. The pencilled and black are rather smaller, generally speaking, than the spangled, but all lay equally well.

POLISH.

One of the most extraordinary looking fowls is the Polish. They are generally great favourites, from their useful quality as layers, and from the pretty top-knot or tuft on their head. They are compact in shape, full round-breasted, and look well on the table. There are several varieties of them.

The white-crested black is a beautiful fowl, dark black, glossy plumage, with its completely white tuft, in the perfect breed. There

should not be a feather of any other colour in the tuft ; the pure white is, however, rarely met with, as it is generally mixed at the edges with a few black feathers.

The golden Poland is truly a handsome bird. Every feather in this description should be golden, from the tuft to every feather of the bird.

Mr. Richardson gives the following description of them :—" The spangled Polish is a bird of extraordinary beauty, extremely rare, and difficult to procure. This fowl presents a symmetrical and regular combination of the following colours—viz., a bright *orange*, a clear *white*, a brilliant *green*, and a jetty *black*, softened down with rich pure brown, every feather being tipped with white, so as to produce the effect whence has been derived the name of spangled. The colour of the hen is a prevailing golden yellow, with white spangles like the cock. In the cock the thighs are black, and are likewise, though in a less degree, marked and spangled with black and golden yellow. The hinder end of the body is furnished with green and orange brown hackles, and the tail is carried well up. The flesh of these birds is of good quality, and they are very prolific. They have no comb or beard, the top-knot is white, and the legs clean and of a bluish slate colour."

LA FLÈCHE.

A class of fowl lately introduced from France is a bird of extraordinary appearance, from the fact of the comb, which never varies either in cock or hen, being so dissimilar to that of the combs of other fowls ; it is more like a pair of straight horns. They are, however, a very handsome, hardy fowl, with a bold carriage, are reared with facility, and are profitable to the dealer as well as to the housekeeper, as they grow and fatten quickly, are soon ready for market, and lay very large eggs. La Flèche is a black fowl—jet-black in fact—looking like black polished marble ; and what adds to its extraordinary appearance is the fact of the face being nearly completely free from feathers and of a bright red, whilst the ear lobes are large, almost disproportionate, and quite white. These birds are more suited for our climate than either of the French breeds lately introduced. They are also more stylish in their appearance, and, although they stand up from the ground, they cannot be denominated leggy, from the fact of their breasts being full and their bodies nicely balanced.

CRÊVECŒUR.

This is another class of French fowl, but not so worthy of consideration for a poultry breeder as the last, as they have not the style in the first instance, and are not so well adapted to our changeable climate. It is necessary they should be kept in as warm a situation as may be possible. They are a very good fowl for the table, and the pullets fine and ready for disposal at an early date. They also lay very good eggs and do not sit, which to many people is considered a very great consideration. They differ from the Flèche fowl in appearance, as, although they are black, or nearly so, they have a large crest on the head, in addition to which they have the spikes or horns which distinguish La Flèche in front

THE HOUDON

is the last we shall mention, and from our own experience, and that of others, we cannot say it will ever become a decided favourite, as it has less to recommend it than any French visitors we have been favoured with.

BANTAMS.

Before quitting the subject of fowls, we must describe a few of the various classes of bantams. Who can have failed to observe the proud strut of the bantam cock, surrounded by his diminutive train of hens ; he looks like a Turk in his seraglio. To have a perfect breed of them, they cannot be too diminutive, although by some persons they are looked upon as useless, from the fact that there is not very much to eat on a fowl which, at the largest, would not much exceed one pound in weight; their flesh is rich and delicate, and their eggs, though small, are truly delicious. How tempting to one recovering from illness experience only can tell; when a large egg would have caused nausea and disgust, the little bantam egg, from its size alone, amuses and tempts the appetite.

The prettiest class of all is the Sebright bantam, raised and produced by the late Sir John Sebright. They are of two sorts, the gold-laced and the silver-laced. The former have, as their name indicates, a pure golden colour; the latter, a white, approaching French white. Each feather is as distinctly marked, or at least should be, with a lacing or edging of black, as if the painter had been called upon to exercise his art and add to the already beautiful appearance of the bird. The bantam cock (pure) throws his head back with such apparent pride in himself and disdain of others, that his little head, surmounted by a rose comb, nearly touches his squarely-cut tail. The wings also, instead of being firmly fixed to the body as in other descriptions of poultry, hang loosely, in a sort of jaunty manner, until they nearly touch the ground. They have blue legs. One can scarcely see them for their wings. They are very pugnacious, and have a lion's spirit in a very small body. The convenience of keeping bantams is that where there is little space you may find room for a few, and tending them, and breeding them (it is a little difficult to do so), may tend to amuse and pass away many an hour which might otherwise prove wearisome and full of ennui.

The Game bantam, as its name indicates, is the game fowl in miniature. Take the black-breasted red, a minikin fowl, with all the pure points of the Derby breed—black breast, a purple band across the wing, its plumage hard and crisp, close-fitting and glossy, making the little game bantam look really smaller than he is.

Black and white bantams, as their name also indicates, should be black and white, and, like all bantams, should be as diminutive as possible in size, with double combs and full tails.

The White bantam, or feather-legged bantam, is now extremely rare. This bird was the pet of our ancestors in days gone by. These bantams should be very small, falcon-backed, and feathered with long quill feathers to the extremity of the toe, thus differing from Cochins, that are only feathered on one side of the leg.

Fowls are subject to various diseases, and almost all they suffer from

may be attributed either to improper feeding or want of cleanliness, both as to their houses, their runs, or their water, and in some measure to our variable climate. Fowls in pens, even kept scrupulously clean, are subject to attacks of apoplexy, and a fine bird may be thus lost, as no premonitory symptoms show themselves to allow of any treatment whatever, even if their possessor be a most skilful adept in the management of poultry. We have often known a fine healthy bird drop dead from his perch. It may probably arise from over-feeding, and not being able to take the exercise birds in their natural state do in searching for food, inflammation of the brain sets in, and they are dead in an instant. Be careful, then, in feeding, not to overdo it, but feed merely in proportion to the exercise the fowls have the opportunity of taking.

Many chickens are lost from what is called the pip. This disease is not where it appears to be, but in a derangement of the alimentary canal. Pip is easily discovered by the appearance of the tongue, which is much thickened, as is also the palate, which causes a difficulty in breathing, and makes them gasp as if choking. You find them unable to eat, their feathers become ruffled, the fowl pines, and at last dies. The remedy which has generally proved successful is to place the chick in a warm place; give it clean wholesome food of bread and milk, fresh vegetables chopped small, with some boiled potatoes mixed with oatmeal, all blended well together, and plenty of pure water. A little castor oil (always a safe medicine) may be given ; and if a tooth-wash, composed of borax, myrrh, and water, be at hand, dilute some and apply it to the tongue and palate, but on no account remove the thickness with the nail, or in any forcible manner. With care and attention to this treatment you may save, in almost every instance, your chicken from death consequent on the attacks of pip.

Gapes are very fatal to the generality of poultry ; and although not generally known, this disease arises from the presence of a worm in the windpipe. The symptoms are easily discernible. The voice is completely altered, the eyes appear full of water, you observe a running at the nose, they have no relish for their food, mope about, and at last die. We have tried several remedies, and in most cases with success. The first thing to be done is to remove those affected from the remainder of the stock ; place them in a dry, warm room, and, taking each bird separately, puff tobacco smoke down its throat. This causes expectoration, and in many instances causes the worms to be dislodged. A little Scotch snuff may also be thrust down the throat. Others have used salt as a remedy. A little sulphur should be put into the water ; and even with their meal a little powdered sulphur and ginger has often proved beneficial. We have also tried gin, or, if not at hand, a little spirits of turpentine, mixed with their food, and made into pills. Where poultry are improperly fed, or if the fowl-house be not properly ventilated, or if the house and run be not kept scrupulously clean, and if attention be not paid to giving a good supply of ground mortar and ashes, gapes will prove the cause of a very swift decrease in your stock of poultry.

Fowls are also subject to inflammation of the lungs, and if you can cure them of it you must be cautious of breeding from them ; for although with care you might bring the fowl into an apparently healthy state, it would prove useless as a breeder and unfit for food. Fowls suffer as much from moulting as from any complaint they are subject to, as may be imagined

from its causing an entire change (gradually though) of their plumage. During this change you can expect no eggs; and while the process is completing itself they must be kept warm, a generous diet given them, and above all things clean water; a rusty piece of iron should be placed in it. Pills made of cayenne-pepper and meal should be given them in addition to their food; it will throw a warmth into their system. Should they appear to suffer much, as chickens frequently do, a little chopped meat and parched corn may be given with advantage as part of their food.

With these few remarks we here close what we have to say as far as regards fowls, being well assured that a strict attention being paid to the simple rules laid down as to feeding and cleanliness, will insure the poultry-keeper a reward which will well repay him for any trouble or expense he may have experienced or incurred.

DUCKS.

Ducks may be kept at a trifling expense, and although it has been laid down as a *sine quâ non* that to attempt to keep them without having a pond on the premises is absurd, we are able to assert from the experience of years that they will thrive and do well without one. A duck will eat almost anything and everything, and although a gourmand, is in no way fastidious as to the description of food. All refuse from the house, vegetables, green or otherwise, boiled with meal, and put into pans as often as they are empty, is all they require. They will fatten themselves. A place of shelter must be provided for them. One part of a fowl-house will answer the purpose well, separated from the other part with wire netting, so that the fowls may not have the opportunity of roosting over them. A little water will of course prove advantageous. We sank an old tub that had been used for scalding pigs in the ground, well puddled the outside with clay to render it water-tight, and in this miniature pond our ducks throve in a most astonishing manner. We were always very successful in rearing early ducks. Their price in early spring well repays any trouble or expense (in moderation) you may incur. Ducks will not bear confinement. They must be allowed to ramble about in the fields or in the garden. They will do no mischief there, being very fond of slugs and snails. They do very much more good than one gives them credit for. Be careful there are no rat-holes near the place you have selected to keep your ducks, as, if there be rats on the premises, you will have but a very poor account of your ducklings. We lost the greater part of a brood in one night. The bedding most suited for ducks is straw, rushes, fern-leaves, or haybands opened out. This should be cleaned out every morning. One good drake will be perfectly content with from four to five ducks, as it is only since the civilization or domestication of the duck that he has become a monogamist, as in the wild state they pair and are most constant and attentive to each other, until the duck begins sitting, when the drake leaves the female and joins any other drake whose family affairs keep the duck closely occupied at home. Many people are in the habit of placing duck's eggs under a hen. For rearing early ducks this is a very good plan to adopt, as you more frequently find a hen wishing to sit early than a duck; but to insure early ducklings, a little care must be taken with them. In a cow-house, if possible, have some pens or

hutches nailed against the wall, just large enough to hold two or three ducklings, and let these be fed regularly several times a day, and in a few weeks they will be fit for market or table. They must be kept scrupulously clean, or they will be liable to cramps, and you will find their limbs distorted. In Buckinghamshire, famous for its breed of Aylesbury ducks, many cottages are in the early spring converted into breeding and rearing houses for early ducks on the plan above described. From nine to eleven eggs should be placed under the duck, according to its size. If a very large bird twelve or even fourteen may be placed under her. The nest should be comfortable, made of broken straw. As ducks will always cover their nests when they leave them, to hide the eggs, it is better to leave a little loose hay about that she may do so when quitting her nest to take her morning bath and her necessary food. When the ducklings are hatched they should not be allowed to go into the water too early, as having no feathers then, but merely down, they soon get saturated and drowned. When once they are fledged they cannot by any possibility become wet, as their oily feathers throw off the water. Ducks will travel a long distance in search of water. They have been known to go upwards of a mile for it. It is well to ascertain before you allow them to frequent such ponds that there are no pike or eels there, as very often a fine duck will be carried off by the former, and young ones carried off by the latter. It is very interesting to watch them on their journey to and from the pond, following each other in single file like troops in a narrow defile. Do not be anxious about your ducks if they are absent all day; in the evening they will return full of food without any expense to their owner.

Ducks begin to lay generally in February, and the eggs should be taken away as soon as laid, leaving one always as a nest egg, which should be plainly marked. As soon as you see the duck inclined to sit, let them remain. A duck sits thirty days, and during that time it will require but little attention, except to see there is food at hand for the duck when she leaves her nest. It takes about three weeks to fatten the young ducks, or in fact any ducks. Leave plenty of food for them about; however coarse it may be matters not. If you have water near at hand on your own premises, so much the better. Their laying-places should then be placed as near the water as possible. Small wooden houses, divided in the middle with a door at each end. An old box makes a very good and inexpensive duck-house. Although water is the duck's natural element, when weak and young they should be placed under cover, as they are very liable to cramp before they are properly fledged.

GEESE

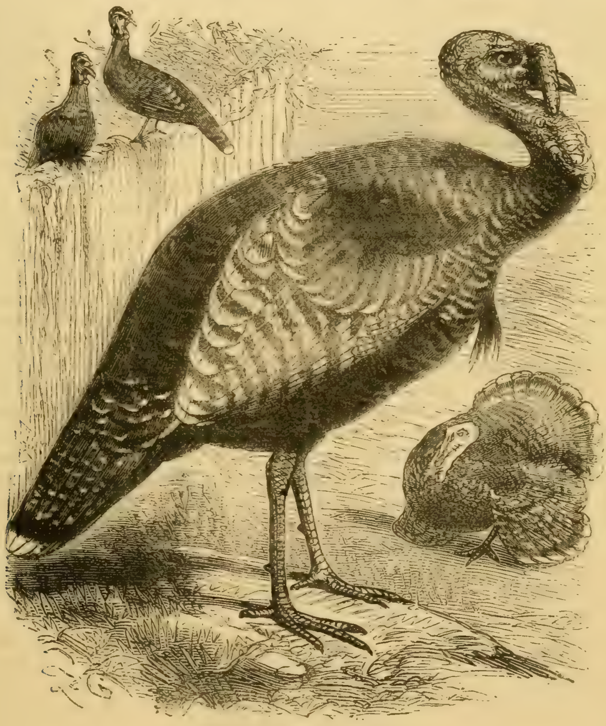
Are without exception the least expensive poultry to keep. If they can be permitted to roam about at large, their great delight is to wander into green lanes and peck about in the ditches at the side of the road. The largest description of geese are of course the best, as also are the white and grey. The time geese sit is generally thirty days, but in mild weather you may expect a hatch a few days sooner; let them have plenty of food, such as scalded bran and oats twice a day; that is, early in the morning before they commence their ramble, and in the evening on their return,

All poultry fetches a good price early in the season in the London market, high prices being given for green geese. The best and quickest food for fattening geese is oatmeal and peas, or any good grain mixed with skim milk or buttermilk. It is a waste of time to give bad corn. Begin to fatten when about six weeks old. Feed well for about three months on this description of food, and the green geese will well repay you. As with other poultry geese must be kept perfectly clean, and punctually fed. You will generally find that *one gander* will be sufficient for four or five geese. During the time the goose is sitting, the gander is a perfect model, sitting by her the whole time, and very determined to shield her from harm. They are at these times very spiteful. When the goslings are hatched, they should be penned for a few days with the goose on a dry grass plot, and she should have plenty of food within easy reach of her and the young ones. Any green vegetables chopped small, oatmeal made into cakes and broken small, and similar food will soon cause them to thrive. Surrey and Lincolnshire produce thousands of geese every year, Lincolnshire more especially. Some years since, before the Continent was opened to us for traffic of every description, we depended entirely upon our home supply of geese. Pennant, in his description of the goose, after showing the way they breed and rear geese in Lincolnshire, gives us an insight into the cruelty (for such it appears to us to have been) practised in plucking the geese for their feathers. The geese are plucked five times in the year. The first plucking is at Lady-day for feathers and quills, and the same is renewed four times more between this and Michaelmas for feathers only. The old geese submit quietly to the operation; but the young ones are very noisy and unruly. We once saw this performed, and observed that goslings of six weeks old were not spared, for their tails were plucked, as we were told, to habituate them early to what they are to endure. If the season prove cold, numbers of the geese die by this barbarous custom. When the flocks are numerous, about ten pickers are employed, each with a coarse apron up to his chin. Vast numbers of geese are driven annually to London to supply the markets, among them are the superannuated geese and ganders (called the cog-mags) which, by a long course of plucking, prove uncommonly tough and dry.

THE TURKEY.

The turkey is a bird so well known, it is almost superfluous to describe it; for who is there that has not heard the gobble-gobble of the noble-looking turkey-cock, with his proud, defiant strut, his widely-expanded tail, his neck like the brightest coral, and the quickly-changing colours of the skin of the head when aggravated by the sight of such a colour as a scarlet or red coat, cloak, or petticoat. The cocks are decidedly quarrelsome and vindictive, and have no really kindly feelings towards the hens, as they attack them indiscriminately. A game cock, though smaller in size, has been known often to give this farmyard bully a thrashing such as could scarcely be imagined from its comparative smallness; but being large and heavy, the turkey cocks are unable to use their spurs with the same activity as the game cock. When young, turkeys are very delicate, and require the very greatest attention. Some people recommend that three peppercorns should be put down the chicks' throats as soon as

hatched ; it can do no harm, and as it is necessary to remove every chick from the nest as soon as hatched, it may be as well to give the peppercorns, as they may incite a little warmth in the chick. Place them as they leave the shell, in a basket with wadding, warm flannel, and feathers, and as soon as all are hatched, put them under the hen. Do not attempt to feed them or cram them for some three or four hours after they are hatched ; by attempting to cram them you may cause injury to the beak, which (as may be imagined) is naturally very tender. Very shortly



The Common Turkey

you will see the chicks looking for food, so some must be placed conveniently for them, and the more simple the variety the better ; for instance, eggs boiled hard, cheese-parings cut small, in fact, minced ; bread-and-milk, with chopped wormwood or boiled nettles, are rubbed together and made into a sort of dry paste—the tops of onions with a little chopped parsley may be added. The hen turkey makes a bad mother ; she will often go about with one chick, and leave the remainder, or tread upon them and kill them. The food must be thrown to the chicks alone, as

the hen is so greedy she will devour it all else. You may vary the food for turkey chicks by giving them potatoes boiled and mashed, mixed with roasted turnip, kneaded into a paste with barleymeal or oatmeal. Do not neglect a plentiful supply of clean water, in pans very shallow to prevent the possibility of their falling in, as wet at that early stage is most injurious to them. It will be necessary to keep both hen and chicks under cover for a week at least, and when they are allowed out with the hen, watch them with a careful eye, so that they may not be exposed to the fatal effects of showers of rain ; as they grow they will gain experience, and will make for shelter on the first threatenings of a shower. You should also be careful not to allow them out too early in the morning, before the dew is off the ground, or to allow them to remain too long in the evening ; they should be housed before the dew begins to fall. When your chicks are about two months old, you will be able to distinguish the hens from the cock birds, the latter showing growth of comb and the rough coral appearance on the neck. You must now be more than ever watchful, as your chicks are chicks no longer, but turkey poults. If it is your desire to have a good strong, hardy brood of turkeys, good feeding is now most essential, and if persisted in from this time will obviate the necessity of cramming for Christmas. It is a most mistaken policy and a false economy to merely keep your stock alive ; they should always be in good condition. It is more economical to feed poultry that have had always a generous diet, than to endeavour to feed and then cram those that have been kept at the point of starvation. The food for bringing turkeys to the degree of excellence and flavour which we expect at our Christmas feast, is or should be composed of sodden oats or barley, oatmeal, barley-meal, boiled vegetables—turnip-tops, cabbage, nettles—and a little wheaten flour, all well kneaded into a paste, with the addition of rice boiled in skimmed milk. This description of food will render them juicy and white and fit for the spit in one month from the day of really commencing to feed. Very many people cram them, but turkeys are so ravenous that cramming is quite unnecessary. They should be fed near home, as travelling for food when fattening robs them of their flesh. It is of great assistance in fattening the turkey, if melted suet or refuse of tallow be mixed with their food ; if unable to procure tallow-refuse, linseed-meal may be added. A little oilcake sparingly administered we have known make fat rapidly. Do not overdo it, as it may induce a flavour in the bird. On no account give turkeys pigeons' food, such as peas, vetches, or tares ; although a favourite food of the pigeon it is poison to a turkey.

Having tried to impress upon the turkey-feeder the care he should take with the young brood, attention must also be paid to them as they grow to maturity. They are liable to the diseases common to poultry in general : care is the best doctor, and attending to the simple remedies given on the subject of fowls, will in most instances be sufficient. A good lock is almost an essential for the turkey-house, as great disappointment would be experienced as well as a great loss incurred, if at the last moment your turkeys, fit for table, were appropriated by some midnight marauder, either biped or quadruped. The fox is very partial to a good fat turkey, and although in some places subscriptions are raised by the advocates of fox-hunting to defray losses caused by Reynard's attacks on the poultry-yards, it is but a poor satisfaction to know that all one's

anxiety and trouble in rearing a brood, have been solely for the benefit of Mr. Reynard, the fox.

Turkeys may be made to attain almost any size; they often reach the enormous weight of twenty-five pounds. In some instances (rare ones, though) they have weighed ten pounds more. Norfolk turkeys are generally in great request, but if you start with a good stock, feed them well, and pay attention to them, whatever county or town you live in, you will not be ashamed to show your turkeys, either for size or flavour, with the best raised in that famous turkey district. The eggs are considered very delicate eating, and as the hen sits only once, one sitting occupying thirty days, you may have an abundant supply for home consumption and for disposal. Turkeys vary in colour: the best and strongest are the green-looking black—they approach more closely to the wild bird in colour; some are pink-white, others speckled brown and white, but the hardiest and the easiest to fatten is the dark description of bird.

PIGEONS.

Pigeons are very profitable things to keep, as they breed every month, but they must be well attended to and have plenty of food. They, like poultry, must be kept very clean. The cot, which should face the south-east, should have sand strewed at the bottom about once a fortnight, and all dirt removed at the same time. They hatch two birds at each sitting. The young are perhaps the most unsightly-looking creatures imaginable. They are unable to feed themselves, but the parents are most attentive up to a certain period; as soon as they consider the young should leave the cot, every persuasion is used by them to encourage them to do so, but if unsuccessful by entreaty or persuasion, they forcibly eject them, and make them seek their own food. If pigeons are kept for ornament only, select Fantails, Pouters, Tumblers, and the Carrier pigeon; if for profit, the Blue Rock is the best description. The best food for them is tares and peas. Plenty of water is a great essential. After dry weather, you will see pigeons revelling in a bath, with their wings fully extended, so that no part of their body may be deprived of the benefit of a really good ablution. Starlings are great enemies to them. Should there be any of these birds located near your pigeon-cot, immediately destroy them, or say farewell to pigeons. They suck their eggs, occupy their nests, and, in fact, entirely root out and destroy the brood of pigeons. Sparrows are also very annoying to them, as they will build in the pigeon-holes. Do not keep too many cock birds among your pigeons, as they are very quarrelsome, and soon thin the dovecot. Pigeons are fond of salt, and, as it is very essential to their well-doing, there should always be a lump of rock-salt for them to peck at, or a large lump of clay placed near the house, thoroughly saturated with brine that may no longer be required for domestic purposes. They are subject to many diseases common to poultry. The universal remedy for all diseases of pigeons may be summed up in two words—bay-salt and cummin-seed, mixed. Should they prove scabby, as sometimes happens, on their backs and breasts, prepare a paste, made of the following ingredients:—A quarter of a pound of bay-salt, the same quantity of common salt, a

pound of fennel seeds, a pound of dill seed, the same quantity of cummin-seed, and an ounce of assafœtida ; mix with some fine wheaten flour and some well-worked clay, beat all well and thoroughly together, put it into garden saucers, and bake in the oven ; when cold, put this paste inside the dovecot. The pigeons will eat it with avidity, and be rapidly cured. It is well to cultivate the breed of Carrier pigeons, as no one can tell how soon the necessity may arise for making these useful birds the messengers of state secrets ; or they may be used between friends as a safe conveyance of correspondence, escaping thereby the espionage of the post-office in some countries. A friend of ours was in the constant habit of corresponding by Carrier pigeon. The rate they fly at, and the distance they travel, is almost beyond belief. Under their little wings those most intelligent pigeons of their breed have not known that the fate of dynasties or families has been confided to their care. Some of these messengers of peace, of love, or of war, have been known to have carried upwards of twelve hundred messages. During the calamitous Franco-Prussian war, upwards of fifteen thousand messages were carried. Readers of the *Times* may have observed at the commencement of the siege of Paris, the "agony," or second column of that paper, with advertisements to or from families in Paris to their relatives in England or abroad. In less than three weeks the whole front page of that journal, as well as half the second page, was filled with that description of advertisement, and the greater part of these were conveyed by the trusty Carrier pigeon.

GUINEA FOWLS.

Should you have sufficient space, Guinea fowls may be kept, as although the eggs are smaller than the fowl egg, you will have many of them, for they commence laying in April or May and continue to do so the whole summer. They are of a very rich flavour. Guinea fowls will not bear confinement, being of a rambling disposition ; consequently they must be carefully watched, or they will lay far away from home, in a hedgerow, perhaps, and remain absent until the hen returns for you to welcome her with her young brood.

It is a matter of impossibility to discover their nests ; the only certain method is to watch the movements of the cock, for while the hen is laying his attention is very great, and where he is you may be certain of finding your eggs. As it is uncertain, from their rambling propensities, when they will take to sitting (they may sit late in the season, when the weather will be too cold for the chicks) it is advisable to secure some eggs early in the season and place them under a common hen ; from eighteen to twenty eggs may be placed under a good-sized hen. You will, if fortunate, secure a brood of guinea chicks about the middle of June. They are very delicate, require great warmth, and careful feeding. Rice, boiled in milk until perfectly swelled, is an excellent food, as is also bread treated in the same manner. Many people treat the chick as they do the turkey chick, by giving it a few peppercorns as soon as hatched. The hens sit twenty-six days generally, so if you collect your eggs early in May, you will have a very early brood, with all the benefit of a long summer before them, so that they will be full-grown birds before the biting frosts of winter set in. They are inexpensive birds to keep, as,

from rambling about constantly, they pretty well contrive to get their own living. On seeing a Guinea fowl walking about, you would imagine it was quite a large bird : it has a most deceptive appearance, the feathers hanging much more loosely than the common fowl's. When plucked, they very seldom exceed the fowl in size. Some old friends of mine were frequently in the habit (when late in the season for pheasants) of serving young Guinea fowls as a substitute, and a very excellent one they were. Having taken the precaution to preserve some feathers from the tail of the cock pheasant, the Guinea hen, with its borrowed plumes, often did excellent duty for its more gaudily-plumed substitute. You can never induce them to roost in the fowl-house ; as soon as dusk commences, you hear them calling to each other in that peculiar note, harsh, grating, like a wheel grinding, which is one reason some people assign for not keeping them. They generally roost in branches of trees, and, like boys playing "follow the leader," as soon as one mounts, the others follow in succession. There is little, if any, difference observable between the cock and hen bird ; on a close inspection, you may see the helmet-shaped crest, with which their head is crowned, larger in the cock than in the hen, and her wattles are also different in colour and smaller, the cock's being blue and large, those of the hen red and small.

THE PEA FOWL,

Though last in our list of poultry, is by no means the least. It is not in every establishment that this bird can be kept, as, being of a very rambling disposition, it requires space. It loves to roam in shrubberies and extensive pleasure grounds, and to such places it is a most appropriate ornament. Who can fail to be struck with admiration at the surprising beauty of the plumage of the peacock, strutting along in majestic grandeur, the tail as it is generally, but erroneously, called, spread? Those splendidly-marked feathers we see expanded are not the tail proper, but the feathers that cover the tail ; it is nearly, or completely, covered by them. The tail proper consists of about eighteen feathers, of a brown, rusty hue, which serve as a support for the beautifully-marked feathers which we generally call the tail.

The hen is not so splendid as the cock, but has an aigrette on its head the same as the cock. Peacocks are very shy birds. The hen generally selects some very sheltered retired spot for her nest. This is not so much to protect her eggs from human enemies as it is to hide them from the peacock, who will destroy every egg that he might see. The same also would be the fate of the pea chicks. He would kill every one he might meet by pecking them on the crown of the head before the protecting feathers sprout. They will not leave the nest for some days after they are hatched; when they do, on no account attempt to chase or catch them, as the hen will lead them away through dangerous places, and, in her hurry to protect them, trample upon and kill them.

The peahen sits from six-and-twenty to thirty days. The eggs are greyish-white, and she seldom sits upon more than five eggs. The chicks should be fed the same as turkey's chicks ; and when full-grown, corn of different kinds, insects, small reptiles, and fruits, are their general and favourite food. As a dish for the table, the roast peacock must be seen and tasted by those

who would enjoy a repast worthy of ancient Rome and of our more modern times.

The peacock is a native of India, Thibet, and the islands of the Indian Seas. This bird is said to have been introduced into Europe by Alexander the Great. The date of its introduction into this country is unknown. Peacocks formed a favourite dish at the tables of the ancient Romans and at the feasts of the Middle Ages.

A vow taken in the presence of the peacock was considered especially sacred, probably from its social and public nature.

The *Peahen* forms a most excellent dish, but it requires larding to make the flesh tender and succulent. When the peacock is served he is adorned with some of his tail feathers. For dressing the peahen, *see* "Model Cookery;" for the Swan, see Christmas Receipts in the article on "Social Duties."

The Common Peacock.

EGGS.

We will close our few remarks relative to the poultry yard with a few words of advice with regard to eggs. When they are plentiful, about July, they should begin to be saved for winter consumption. There are two or three ways of preserving them, all equally simple. Some dip them in boiling water for a second and instantly remove them ; others oil each shell. Either of those methods will prevent the air entering the shell — in fact it becomes hermetically sealed, as it were. Others keep them on shelves with holes in them to receive each egg ; these should be turned every day, which is a very tedious process. Others place them in a tub or stone jar closely packed, and pour lime-water, moderately strong, over them until they are all covered. Great care must be taken that the lime-water be not too strong, as in that case the shells will be completely destroyed, and your eggs will be one incongruous

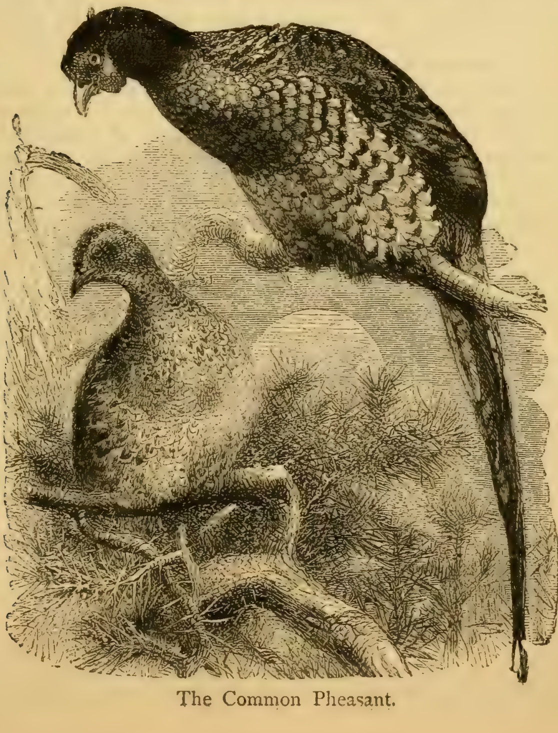
mass. Should you at any time desire to make a present of a sitting of eggs of a choice breed of fowl, it is satisfactory to know that your friend will receive them in safety if properly packed. They may either be packed in a hamper or a box; the former is the best. Put at the bottom of it a good layer of hay or grass; wrap each egg separately in the same, and place over all a good covering of wool. Pack them carefully, and press well round the spaces at the sides some of the same description of packing, so that there may be no shaking of the eggs; should there be, disappointment will most inevitably follow, as they will be addled to a certainty.

To Fatten Poultry.

Crush and soak the corn in water. The food will then go further, and it will help digestion.

Breeding Pheasants.

The pheasant breeds generally in April, making a very rough nest on the ground; but in these days of battue shooting, it would not do to



The Common Pheasant.

depend entirely on the hap-hazard chance of wet or dry hatching seasons, so, to insure a plentiful supply of game, many hundred eggs are placed under common fowls and reared and fed as poultry until they are large enough to turn out into the woods, when they are dignified with the name of game.

The following directions for rearing them under hens have been, we know, adopted with success :—A sufficient number of eggs being provided, put them under a hen that has kept her nest for three or four days ; and if two or three hens happen to sit on the same day, an opportunity will be afforded of shifting the good eggs. At the end of ten or twelve days, examine, and throw away those that are bad, and set the same hen or hens again. The hens having set their full time, such of the young pheasants as are already hatched must be put into a basket, with a piece of flannel, till the hen has done hatching, then place the whole brood under a frame, with a net over it, and a covered place for the hen, so as to confine her ; but leave the young pheasants at liberty to go or return to her at pleasure. Their food must consist of boiled eggs cut small, boiled milk and bread, alum curd, and ants' eggs, a little of each and often. Rice may also be given, softened by boiling ; and, instead of ants' eggs, which in some places are not easily procured, or in addition to them, maggots from decayed flesh may be used. Artificial ants' eggs may be easily made, composed of flour beaten up with an egg *and the shell together*, and the pellets rubbed between the fingers to a proper size.

After two or three days, the pheasants will know the call of their foster-mother, and may then be allowed to run upon a grass-plot, or the edge of a corn-field is very desirable, as they like the tall stems, and soon learn to pick up the green grains. Take care to shift them with the sun, and guard them from cold winds. They ought not to be let out in the morning before the sun is up, and they must be shut in with the hen in good time in the evening. When they are old enough those that are to be turned out wild ought to be taught to perch. This is done by tying a string to a hen's leg, and obliging her to sit in a tree all night. She should be placed there before sunset, and if she falls down she must be perseveringly replaced, till she becomes contented with her position. Next the young birds will follow her example and perch with her, and in a few days they will be able to take care of themselves.

If regularly fed, they will remain near any particular spot, and frequent a lawn or pleasure ground as familiarly and almost as fearlessly as common poultry.

Instances have been known of the pheasant breeding with the common fowl. Other crosses also have occurred—viz., with the pheasant and turkey, as also with the Guinea fowl. We have mention also of a cross between the pheasant and grey hen, the female of the blackcock.

Pheasants are bred in vast numbers now in this country, and at a great expense to those that preserve them. It is generally supposed that by the time the pheasants are fit to shoot, each bird has cost in its rearing from 2*s*. 6*d*. to 3*s*.

PHEASANTS FOR AVIARIES.

The Chinese species of pheasants have a much more splendid plumage than the British-bred pheasant. Their plumage is truly magnificent, and

should find a place in every aviary. The Golden pheasant is one blaze of splendour, reminding one almost of the description of birds in some fairy tale. In contrast to the gorgeous plumage of the Golden, we have the delicately-tinted Silver pheasant, also from the same country; but they are getting common in this country now—in fact, no aviary is considered complete without them; and it is generally supposed that if they were turned out, as the other common pheasant is, they would thrive equally well.

There is one description of pheasant which has splendid plumage, generally known as Reeves' pheasant. The feathers in the tail of the male bird are very nearly six feet long.

The Japanese pheasants are also remarkable for their extraordinarily beautiful plumage. They are in their manners and habits exactly the same as our own common pheasant.

The Himalaya mountains in Hindostan have a remarkably extraordinary description of pheasant called the Horned pheasant. The plume of this bird is also extremely beautiful.

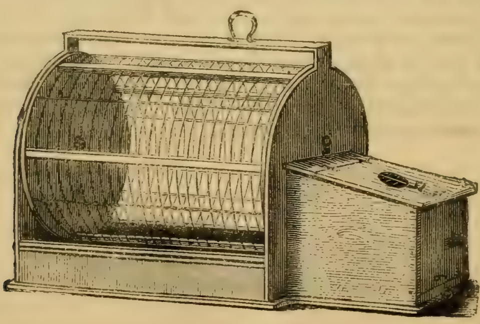
The Argus pheasant of Sumatra and the adjacent islands should also be found in our aviaries. The wings of this bird are covered with beautiful spots, which the male bird is proud of showing when strutting in the society of the female birds. It is also remarkable for the extraordinary development of the secondary quill feathers of the wings, which, although an impediment in flying, are of very great assistance when running, which it does very swiftly. The tail of this bird is also beautifully spotted; and when disporting with the female birds, it is raised aloft and spread to show its beauty. The generality of pheasants feed on grain of various descriptions; but there is one found in Nepaul, called the Impeyan pheasant, which lives principally on bulbous roots, and its bill is of the shape of a scoop, which enables it to raise them with ease. The plumage of the male bird is perfectly resplendent. It is almost impossible to describe the beauty of the several tints—changing and changing again and again with the dazzling hues of green, steel-blue, and golden bronze. At a first glance one would imagine the bird clothed in scale armour. It has a crested head, of a naked shaft of feathers. The back of this splendid bird is of the purest white. The female varies in its plumage from the male bird, being altogether of a sombre hue, bearing no resemblance whatever to the transcendent beauty of the cock. The young birds are plumed much in the same manner as the female.

DOMESTIC PETS.

THIS is a very comprehensive title, and might fairly be supposed to comprise ponies, donkeys, dogs, cats, rabbits, poultry, and pigeons; but this article will be confined to animals kept in the house, and will especially relate to those which may be legitimately called Pets, the care of them devolving entirely upon their owners. Out-of-door pets must necessarily be left in a great measure to the care of servants, and cannot be so essentially home friends.

Squirrels, dormice, and white mice are sometimes kept in captivity by those whose lives are chiefly spent in towns, and who have no knowledge of the wild frolicsome creatures in their native haunts; but they appear to lead very unnatural lives in confinement, and are not very desirable pets for the house: it is difficult to keep their cages quite sweet and clean. All may be domesticated, however, and are, we believe, capable of attachment to their owners. We have never kept any ourselves; but our brothers had dormice from time to time, and several small families were born and brought up under their care, but most of them came to an untimely end.

The squirrel seems so delightfully free and happy, playing about on the tops of the tallest trees in the woods, launching himself boldly into the air, and taking tremendous leaps from branch to branch, that after seeing the pretty little creature at his ease, one does not feel inclined to deprive him of the liberty he seems so thoroughly to enjoy; but if he is captured, his life ought to be made as happy as possible, and he should be allowed as much exercise as he can have in the house. His cage



Ordinary Squirrel's Cage.

should be at least 3 or 4 feet long and 3 or 4 feet high, and instead of the revolving cylinder, which is very injurious to the little prisoner, he

should have a good-sized branch of a tree, to form perches for him, and be able to frisk about at pleasure in his little parlour. A little sleeping-box must be attached to this, with a door at the back, and the board forming the floor should be drawn out like that of a bird-cage. Every part of the cage must be kept as clean as possible, and the moss and cotton wool, which must be put into the squirrel's bedroom, must be changed nearly every day. The active little creature does not often live long in confinement; but if taken young, and very carefully managed, it may become a very tame and a very engaging pet, and may sometimes be trusted to frolic about out of doors when tame enough to return at his owner's call. His cage should, however, be lined with tin; for he is apt to gnaw the wood with his sharp little teeth when impatient of confinement. He should be fed on nuts, almonds, filberts, beech masts, walnuts, acorns, wheat in the ear, and fir cones; and he is fond of milk, cold tea, and bread-and-milk. A little bit of boiled potato, and even a tiny morsel of cooked meat, may be given as a treat, and a stale crust of bread to gnaw. All creatures require variety in their food, and in his wild state the squirrel gets animal food by robbing birds' nests of their eggs occasionally. He lays up a store of food for the winter in various holes and crevices, and is much too acute ever to put by a nut in which a maggot has been, or to miss the place where his treasure is concealed, even when several inches depth of snow covers the ground. The female is a very affectionate mother, and will remain with her young in the nest even while the tree in which it is, is cut down, or will carry them, one after another, in her mouth, to a place of safety. She generally builds on the topmost branches of the fir tree, and the nest is made of dry grass and sticks, very slightly yet firmly put together, and lined with fur, which she scratches off her body before the young ones are born. This is generally in the summer, and the young squirrels remain with their parents till the following spring, when they are able to manage for themselves. They have a substantial winter's nest, to which they appear to add every year fresh layers of hay and moss, to make their habitation more and more warm and comfortable. I have been told that the best time to buy a squirrel is at the end of September, when it is fat and vigorous and its fur is in good condition; but it is never safe to purchase those which are sold in the street as "wonderfully tame," and which will allow themselves to be handled by a stranger, and pulled about, without showing any disposition to bite. The probability is that the poor little creatures have been stupefied by some drug, and that they will either recover their natural ferocity in a few hours, or die—poisoned by the narcotic which has been given them.

The dormouse is very like the squirrel in many of its habits: it lives upon much the same food, and is a hybernating animal too, laying up a store of eatables for the winter, and passing the greater part of the cold months in sleep. In a cage it is not seen to advantage: throughout the day it is generally rolled up into a little soft ball of fur, fast asleep, and its architectural talents are quite thrown away. It is in its wild state a very clever nest-builder, and Mr. Wood gives a most fascinating description of a dormouse's nest, which he found in a hedge 4 feet from the ground, in the forking of a hazel branch, the smaller twigs of which formed a palisade round it. The nest itself was 6 inches long and 3 wide, and constructed of

grass blades and leaves of trees. The blades of the sword-grass were chiefly used, and these were twisted round and between the twigs so as to form a hollow oval nest. Finer sorts of grass and the slender stems (not bigger than thread) of delicate climbing weeds, interwoven with the leaves of hazel and maple trees, were used for the bottom of the nest; the entrance to which was most ingeniously concealed by long blades of grass placed across it in such a manner as to spring back to their places, after having been pushed aside to admit the dormouse into the nest. This was never used as a

Dormouse.

storehouse; the little creature had its winter provisions carefully hidden under a thick branch in the neighbourhood of the nest. While hybernating, the dormouse does not seem to require food: but it wakes up occasionally during the winter, perhaps when a warm sunny day calls it into life for the time, and then it takes food before it rolls itself up and sleeps again. It requires a good deal of warmth, and must have soft hay, moss, and wool given it to form its bed, and it does its best with these, but cannot construct anything very beautiful out of them.

If we had a tame dormouse, we think we should try to provide it with materials which it might be induced to use for the construction of a nest like that described by Mr. Wood. The dormice our brothers had were kept in a cage made for dormice, wired at one end, with a little compartment at the other boarded in, the door of which was pulled up and pushed down at pleasure, so that the little creatures could be shut into their bedroom when the outer room was cleaned out. Even with this precaution they were continually getting out of the cage, they were such nimble little animals, and the whole house was often searched in vain for the truants. At last, perhaps, they would be found in the fold of a curtain or underneath the cushion of a sofa. Sometimes a worse fate befell them, and they would creep under the cushion of an arm-chair, and get crushed to death, or be trodden under foot, or be squeezed under a door in trying to escape. They sleep during the day and come out in the evening, so that they must be provided with food as soon as it grows dusk; and if they have a large cage with sticks placed across it, they will gambol about very merrily in the open part of it as soon as night

approaches. Their food should be varied as much as possible : they will eat nuts and almonds, peas and beans, canary seed, and various other grains ; and they are very fond of the milky juice of a dandelion or sow-thistle. We used always to put a little tin pan of milk into the cage every night, and they would often drink it all, especially when they had young ones. It is said that rabbits will be hindered from devouring their young by providing them with water, and that they would not eat them unless maddened by thirst or suffering from extreme hunger. Some dormice have the same propensity to cannibalism ; and if this theory about the rabbits be correct, it may apply also to the mother dormouse which devours her young. We thought she did so when alarmed for their safety, not being able to conceal them elsewhere ; but it would be well to provide her with a constant supply of water or milk when nursing. The milk is useful too in furnishing the dormouse with animal food; out of doors it eats insects. There are generally four or five young ones in a litter, born blind, but able to see in a few days, and they are soon capable of taking care of themselves. The cage must, of course, be kept perfectly clean, and the floor of the open part should be sanded like a bird-cage.

White, Grey-and-White, and Brown and White mice are sometimes kept in cages like those of the dormouse, and they must be treated in the same manner. The common Brown mouse is said to be a more tractable and intelligent pet, and to be easily tamed by patient kindness. I never heard a mouse *sing*, but several instances are recorded of mice who have learned to imitate the chirp and even the song of a canary kept in the room in which they were ; so that it might be worth while to

White Mice.

try to give such pets the benefit of a musical education for the chance of their acquiring so curious an accomplishment. The little Harvest mouse, the tiniest of British quadrupeds, has sometimes been kept in a cage, and will grow tame enough to take its favourite food, flies and other insects, from the hand. It is a most beautiful little creature, very active and agile, climbing about by means of its long tail and flexible toes, and leaping like a little Jerboa. It should have grains of wheat and maize, and canary

seed, and plenty of water always in the cage; and wool or flannel and grass for its nest, which in its wild state is the most beautiful and elaborate construction of leaves and grass woven together into a round ball and suspended from strong grass-stems, wheat-stalks, or thistle-heads. In the winter it takes refuge in corn ricks, or burrows deeply in the earth, and makes a warm bed of grass. Even in confinement the harvest mouse will show its instinctive propensity to store up food for the winter, and if a number of grains of wheat or seed are given to it, will carry them off and hide them in its nest.

None of these little creatures, however pretty and intelligent they may be, seem to me to be such desirable pets to be kept in the house as *Birds*, to which the remainder of this article will be devoted. We can make them so happy, and they can tell us when anything is amiss with them so plainly —so thoroughly enjoying our petting, and becoming so attached to us— that no trouble is thrown away upon our feathered pets.

On the whole, I think canaries flourish best in imprisonment. All the English finches do well in aviaries or cages; but one does not like to see them imprisoned while their brothers and sisters are flying about at large close by—one thinks they must envy them their liberty, and long to join them; while canaries would suffer extremely exposed to the cold of winter, if, indeed, they survived it. As regards other birds—robins, wrens, titmice, sparrows, &c.—it is much pleasanter to have them visiting us from the garden than to keep them shut up all the year round; and larks and nightingales are so completely out of their natural element in cages that one cannot feel happy in keeping them. Any one who will take the trouble to feed the birds that congregate round the house in winter may soon have a family of pensioners.

The robins will become our very familiar friends—hopping about at their ease on the breakfast-table, examining every article in the room with the utmost self-possession; will visit us regularly through the cold months, and, if they leave us in spring, will bring their young ones to make our acquaintance when they leave their nests. Crumbs of bread, potatoes, and scraps of fat will make a feast for the poor little hungry birds, driven by frost and snow to our doors; and the saucy tomtits and sparrows will afford us much amusement in return for our hospitality.

We may get much insight into the special characteristics of the birds by watching them when they are at their ease, and a hard winter will sometimes make them so tame, and so accustom them to our care, that they will hover about us out of doors, and peck at the windows for admittance at their usual feeding hours.

Although I do not advocate keeping English birds in confinement as a rule, it will sometimes happen that nestlings will be thrown upon our compassion, which have either fallen out of their nest, lost their parents, or have been taken captive by village boys, and are likely to come to a miserable end if not taken care of. Under these circumstances it is as well to know how to bring them up by hand. I once had several nests to take care of, and all the young birds were reared and sent out into the world when able to take care of themselves; all but two bullfinches, which were given to a neighbour, who fed them upon hemp-seed—the consequence of which was that nearly all their feathers fell off, and they were the most miserable little objects that can be conceived, and their little red-

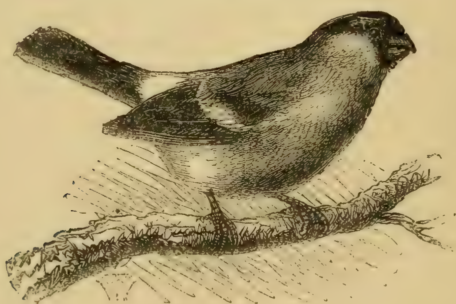
hot bodies were quite uncomfortable to touch. A course of warm baths and plenty of cooling green food, however, restored them to health and beauty, and they were returned to their owner with a warning against hemp-seed. It is said that a bullfinch fed entirely upon this heating seed will become blind.

Nestlings should be fed upon bread soaked in water, squeezed nearly dry, and chopped up finely with rape-seed which has been scalded by pouring boiling water upon it, and leaving it till quite cold. Of course this food must be made fresh every day; if it grew sour it would kill the birds at once. About four quills full of it is enough for a meal for one young bird; but they generally clamour for food till they have enough, and then settle down to sleep again. They must be fed as soon as possible in the morning after sunrise, and will require food at intervals of from one hour and three-quarters to two hours throughout the day, the last meal being given about sunset, when they must be covered up for the night. The best plan is to keep the nest in a shallow box, over which a board can be laid to darken it, otherwise the birds will be asking for food every quarter of an hour. As soon as they hear a step in the room they begin to chirp; and when the box is uncovered they will stretch out their necks, and as they grow older jump out of the nest, and fly upon the hand or shoulder in their impatience for food. In time they will learn to feed themselves with the soft food, and by degrees to pick up and shell the seed put into their cage; for of course they must be put into a cage as soon as they are fledged sufficiently to enable them to fly. It is best to crush the hemp-seed for them at first, but they soon learn to shell the canary and rape-seed.

The linnets and greenfinches I brought up by hand were very tame, and although I left seed and water always within their reach, I accustomed them to be fed by me, and kept any food of which they were particularly fond—hemp-seed, plantain, or chickweed, for instance, which all birds love—to be given them as dainties; so they always expected something nice from me, and would fly out of their cages and all round the room in their joy as soon as I opened the doors, returning to perch on my hand, shoulder, or head when they wanted their food. The greenfinches were very bold birds, and as familiar as possible with me. They were great eaters, and very eager for their favourite food, so they alway welcomed me very heartily; but I did not prize their affection so much as I did that of the linnets, which were naturally more shy and retiring, and required more courting and petting. They are very nice pets, and become very much attached to their owner, and their song is very sweet; but if kept in confinement they never acquire the red poll and breast which ought to distinguish the male bird in full plumage. They are fond of flax or linseed, but they must not have much of it, or they will grow very fat. Canary and rape-seed should be the principal food both of linnets and greenfinches. As soon as my four green nestlings were full grown I let them fly out of the window, but for a long time they used to come back to the cage for food, and sometimes would roost there during the night; however, at last they found companions of their own kind in the woods and fields, who gradually weaned them from us.

The bullfinch is a very nice pet; he becomes so attached to his owner, and will not bestow his affection indiscriminately, so that he repays one for any attention given him. He is subject to fits of jealousy,

however; and I have known birds who would take a violent dislike to any friends of their mistress upon whom they thought some of the affection due to themselves was bestowed. Some have died of grief when separated from those who petted and fed them, and who had won their faithful little hearts completely. They are happy in confinement, if not made ill by improper food, as they are not very active birds. They should have no sweets or injurious delicacies, but be fed upon rape and canary-seed, with an occasional treat of hemp-seed, water-cress, lettuce, and chickweed and groundsel. If they mope and ruffle their plumage, they should be fed only upon scalded rape-seed for a few days. When moulting, they require a little hard egg and breadcrumbs, and a rusty nail or a clove in their drinking-water. They like a little bit of apple and a few berries occasionally. In gardens they are supposed to do a great deal of mischief by eating the young buds and fruit; but it is doubtful whether the good they do by eating the insects upon them is not more than the destruction they are accused of. Their natural song is not musical, but they may be taught to whistle or "pipe" airs very



Bullfinch.

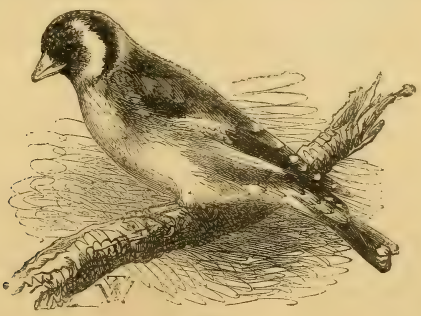
accurately. The Germans take great pains in the teaching of their young bullfinches. They divide them into classes of five or six pupils, and they are kept much in the dark, and the tunes they are to learn are repeated over and over again to them while they are fed. By degrees light is admitted, and after a time the birds are taken out of the class, one by one, and given into the charge of a boy, whose duty it is to repeat the tunes on a bird-organ from morning to night, till the bird acquires them perfectly, when a large price will be paid for him. Some bird teachers keep their pupils fasting while they learn their lessons, and only feed them as a reward; but I believe the best and most humane plan is to repeat the airs to them while they are digesting their food; and if they are taught by good whistling instead of by a bird-organ, they generally pipe in a pleasanter and more flute-like manner. Bullfinches that can pipe three or four distinct airs correctly are highly prized, and 4*l.* or 5*l.*, or even more, will be paid for them. It is, however, as well to suggest that there may be disappointment in store for their purchasers, for the birds are often apt to forget their accomplishments while they are

moulting, and they ought to have the airs frequently repeated to them during this time of silence, and when they are beginning to use their voices again.

The bullfinch can be taught to perform many amusing tricks, such as drawing up water in a bucket from a little well underneath his cage, and the more difficult feat of pumping it up to fill his bath ; but although intelligent and docile enough to learn these, such accomplishments do not appear to suit him so well as the active, restless little goldfinch, who is scarcely still a minute in the day, and seems to want something to do to fill up his time in confinement.

The goldfinch is an universal favourite, both from its beauty and sprightliness : it is very restless in a cage, and therefore I do not think it appears as contented as some less active birds ; but it will live many years in confinement, and in an aviary is as happy as possible. It ought not to have a bell-shaped cage, as it is apt to grow giddy, twirling its beak along the wires. It is very easily tamed, and is capable of great attachment to its owner, and may generally be safely allowed a flight round the room while its cage is being cleaned. I had one which would fly across the room to me as soon as its cage door was opened, and perch on my shoulder for its favourite food of hemp-seed. It is rather fond of eating, I think, and takes so much exercise that I suppose it requires plenty of food. It will not sing without a few hemp-seeds in the day, but it must not be fed solely upon this heating seed. Canary, rape, and poppy-seed should be the ordinary food of goldfinches. Lettuce, groundsel, chickweed, and water-cress they should have frequently, and plantain in the winter ; in the wild state they feed much on thistle-seed, and they should often have a thistle-head given to them, to pick the seeds out of it for themselves. They ought not to have sugar or sweet cakes, but they exceedingly enjoy a treat of biscuit, and Reading cracknels are very wholesome for them, and thoroughly appreciated by goldfinches, bullfinches, and canaries.

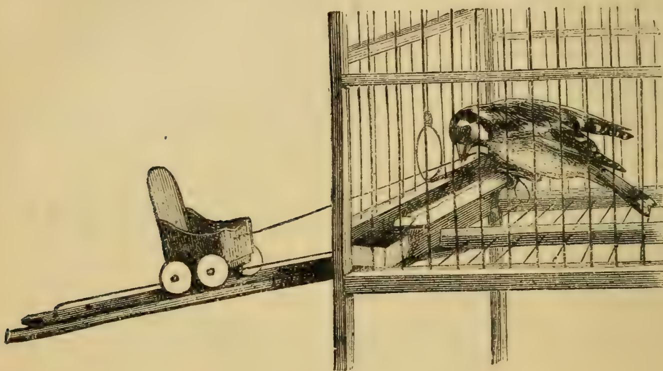
The goldfinch is a very tractable bird, and there are many accomplishments which he will learn, and seems to exhibit with pleasure. He may



Goldfinch.

be taught to fire off a small cannon, to feign death, and stand unmoved while fireworks are let off close to him, to mount a ladder, &c.; but I

fear when these tricks are made use of by his master to exhibit in public for pay, he is often treated with cruelty to make him a proficient in them. Many very harmless accomplishments he will learn, however, merely by patience and kindness on the part of his teacher—to open a box for his seed, to ring a bell when he wants food, to drag a little waggon up an



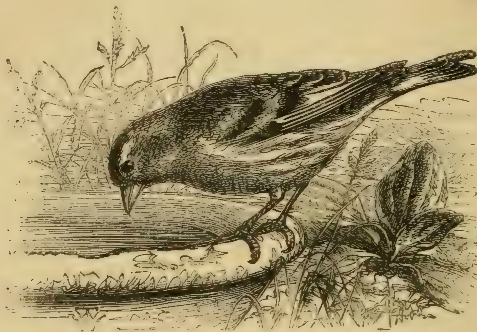
inclined plane into his cage, and to draw up water from a little well underneath it. All these are easily taught, and the bird really seems to find pleasure in such little tasks. One of my birds who lived in a cage so constructed as to have the seed always in a box of which he had to lift up the lid, and the water in a well to be drawn up in a bucket, was quite unhappy when his home was undergoing repair, and he had to live for a time in an ordinary cage, and sang his merriest song when he had to go to work with his little chain and pail again. I taught him to lift the lid of the box by having it open for one day, and then gradually lowering it by means of a piece of silk put round it, fastened at the back of the cage, till it was quite shut. He very soon found out that he must lift it up with his beak in order to reach the seed; and at last he became so crafty about it, that he would take out two or three seeds at once, and put a reserve by his side between the wires while he ate one. The cage was made with a wooden back, and the box was let into this above the door, and the lid fastened to the inside with two little hinges (care should be taken that the lid is not too heavy for the bird to lift easily, and that it should fall at once when not held up); a little bow window was constructed in the front of the cage, in the floor of which was a little hole with a wire across it, to which was attached a light silver chain fastened to a silver bucket about the size of a thimble. A small coloured glass tumbler was fixed below the bow window, by means of four strong wires and a ring. This was filled with water and the bucket dropped into the well, and the bird hauled up the chain with his beak, holding each fresh haul with his feet till the bucket came to the hole, and he could drink out of it. I taught him this accomplishment by filling the bucket with water, and putting it on the floor of the bow window to accustom him to look for water there

then I let it down by means of the chain pushed through two of the side wires by degrees, lowering it a little more every day. At first the bird pulled up the short bit of chain with his beak, and let it go before he could drink out of the bucket, but he gradually found out that he must hold the chain when he had drawn it up, and when he had once succeeded in doing this his education was finished ; he never forgot the art, and often showed his delight in his task by singing when he had drawn up the bucket while his chain was under his feet, before he quenched his thirst. Of course it is necessary to see that the machinery of the bucket, chain, and well is always in order ; any hitch preventing the bucket from falling into the well and getting re-filled with water would cause the poor little bird to die of thirst. The bullfinch and siskin will readily learn this accomplishment, and I had a mule bird (whose parents were a goldfinch and canary) who learned it very quickly ; but I never succeeded in teaching a canary to put his foot on the chain, though he would pull it up with his beak readily enough—of course, always to be disappointed by the falling down of the bucket. A goldfinch will learn to pull a little waggon up an inclined plane in the same way, and to take his seed out of it, the chain attached to the waggon having to be hauled in and held in the same manner. The way to teach him to ring for his food, is to suspend a little bell in a corner of his cage, and when he has been an hour or two without food, to ring it by means of a string attached to it, and immediately to place some of his favourite seed in the glass. In a few days he will discover that whenever the bell rings he gets a meal, and will seize the string, and peal away merrily whenever he is hungry.

The goldfinch is rather subject to epileptic fits, and whenever he is seized with one, he should be plunged head downwards into cold water, and one or two dips will restore him at once. He is a large eater, and in all probability has indulged his appetite too much, so that he must be kept upon a low diet of lettuce seed and thistles, and have no hemp-seed for a few days after he has had one of these fits.

He is fond of bathing, and should have a bath every day. The goldfinch will sometimes mate with the canary, and the mules are very pretty. He must, however, be taken away from his wife as soon as she begins to lay, as he has a mischievous propensity for breaking the eggs. After the young birds are hatched he may be put back into the cage, and will help in feeding them. I have never had a siskin, but it is a very favourite bird among bird-fanciers, especially in Germany, where it is ranked as one of the best of cage birds. It is smaller than the canary, and its song is not so loud—a low sweet warble, which suits some people better than a more beautiful song. It is a very sociable bird and very easily tamed, and is very amusing to watch in a cage, on account of its whimsical postures and climbing propensities. It seems to delight in doing things which it would be next to impossible for ordinary birds to accomplish : it will drink in a perpendicular position, hanging by its legs, with its head downwards, and sleep clinging to the wires instead of roosting on a perch, and will run along the top of its cage like a fly upon the ceiling of a room. It seems to use its feet very much like parrots, and to throw somersaults like a mountebank for amusement. Doubtless it would soon learn all the feats which have been spoken of as accomplished by the goldfinch, to perfection. The siskin is said to be very fond of eating, and to eat

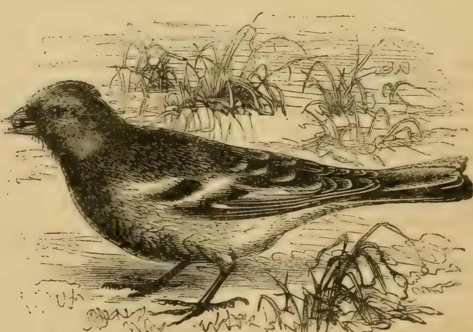
much more than most birds of its own size. It should be fed on canary, rape, and poppy-seed, with occasional treats of hemp-seed and almonds, of which it is very fond, and must have plenty of water both for drinking



Siskin.

and bathing. Very handsome mules are obtained by mating the siskin with the canary.

The chaffinch is not valued so much in England as in Germany, where bird-fanciers prize it exceedingly for its song. Indeed, the enthusiasm about it is so great that in some of the villages the inhabitants appear to have quite a passion for the chaffinch's song. At Buhl, in Thuringia, the cotters will go ninety miles to catch one who is supposed to sing well, and



Chaffinch.

a common workman will give as much as 16*s*. for one, and live on bread and water to get the money ; indeed, there is a proverb amongst them, "A chaffinch is worth a cow." Bechstein gives no less than eight varieties of songs most admired in his country, and says that no amateur can hear the

double trill of the Hartz without being in an ecstasy. The chaffinch's song seems to vary in different countries and in different provinces. The bird-catchers who frequent Epping Forest, say that the birds there sing a different song from those on the other side of the river; and they have singing matches amongst their birds, the prize being given to the owner of the bird who delivers the greatest number of perfect notes within a certain time. A perfect note in their estimation is represented by *toll-loll-loll-chick-wee-do*, and if the bird slurs over his notes, and stops at *chick* or *wee*, the note is not to be counted.

The chaffinch is easily tamed, and lives happily with other English finches and canaries; feeding on the same food recommended for the goldfinch. Too much hemp would produce blindness or some other disease. A bell-shaped cage is objectionable for the chaffinch, who has the same disposition as the goldfinch to giddiness. In its wild state it builds the most beautiful nest of lichen, lined with feathers; in confinement, I am afraid, its architectural talents would fall into abeyance.

If my readers desire to have a nursery of young birds, they will find canaries the best in every respect to rear. There is no doubt about *their* happiness in a cage, if proper attention be paid to them; and I would fain believe that no one who reads these pages would willingly cause them suffering from want of care, or would attempt to keep pets upon whom they are not ready to bestow all the time and trouble necessary to keep them in health and comfort. People are not worthy of their birds if they neglect them, and leave them to the care of servants, to whom they are either troublesome or indifferent. And their attention will be received with such expressive gratitude and delight—their feathered pets will welcome them so gladly, and show so plainly how much their happiness depends upon their care—that they will be sufficiently rewarded for its bestowal. They should become intimately acquainted with their birds' dispositions, too, and learn their language thoroughly, and they will find a fund of amusement in their society. This is more easily accomplished when one or two pet birds are kept in a cage alone, than when there are a number of canaries together in a very large cage or aviary, but I always like best to see them under such circumstances—they seem so thoroughly happy when they have room for flying and frolicking about; some birds, too, will sing best when they are excited by emulation with others, but occasionally a good songster is sulky when in company, and prefers being alone. One of my birds who had been accustomed to a small single cage, never seemed at ease when in a large one, and resented being jostled

Canary.

by others. He was an old bird, too, and did not like his saucy young companions, and showed his displeasure by total silence whenever he was placed with them ; so I had to restore him to solitary grandeur.

All through the autumn and winter months, about twenty or thirty birds will live very happily together, in a cage from 3 to 4 feet long, and 2 feet high and wide. This should be made of tin wire, as brass is apt to corrode, and communicate its poisoned green rust to the birds, when they rub their beaks against it ; the iron rust is very good for them. The wood may be either mahogany or varnished deal. The arrangements for seed and water should be carefully attended to. If the former is put into the cage, the bird-hoppers are best to use, because the seed is kept clean, and only falls down as the birds peck and scatter away the husks beneath. A good plan is to have the seed and water in long covered boxes outside the cage, with china or glass trays to take in and out of them. These can be kept perfectly sweet and clean, and the birds cannot make the seed or water dirty. Objections are made to the old-fashioned bird-glasses, because they are sometimes carelessly put into the wires which hold them, so that they slip aside, and the poor little birds cannot get at the water ; but no provision for their comfort can succeed if carelessness be allowed at all. I do not advocate their use, however, for if they are very full, the seed or water often gets spilt into the cage, and if not, the birds have to stretch their little necks painfully to reach their food. Sometimes, too, a young bird will contrive in some mysterious fashion to get into the glass, and having got in, cannot extricate itself. One of mine was nearly suffocated by getting into a seed-glass, and it was a long time before I could pull it out again. I had to pour all the seed out first, and at last I contrived to rescue it ; but another bird, of which I heard at the time, got into the water-glass, and was drowned before its danger was discovered. Nothing looks prettier at first than a fountain in the middle of the cage ; but it becomes so dirty in a few hours that it is not well to use it. A bath, wired round like the cage, should be made to hang on the doorway, and the birds will go in and out and splash about in this, with the greatest delight. It must be taken away when they have all had a good washing, in cold weather especially, as some of them will go into the bath again and again, and get completely chilled. In winter the water must have the chill taken off, and whenever the sun shines they may have a bath safely. They must always have sand spread on the board at the bottom of the cage ; and the coarse gravelly sand is best for them. It is a good plan to have a second board and two sets of perches for a large cage ; this gives opportunity for washing and drying them thoroughly, and when the board gets wetted by the splashing of the birds, it can be dried before it is returned to the cage. Of course the perches must be made to take in and out of the cage ; they should be round and smooth like a bamboo. A swing suspended from the centre is a source of pleasure to the birds, and if the cage has a domed top, looks very pretty underneath it. They much enjoy having a pot of mignonette or of chickweed put in ; and all perch eagerly about it, and soon devour every leaf and flower. No plant that would be injurious to them must be put either in or close to the cage, for they are sure to eat the leaves, and the beauty of the plant is destroyed in a few hours. My cage stands on a flower-stand and has flowers all round it, but the plants are kept out of

the bird's reach. A fir branch put into the cage occasionally gives them a good deal of amusement, and seems to do them no harm ; but it is very soon reduced to a bare pole. Plantain is very good winter food for them, and they enjoy picking it from the stalk. Their food should have plenty of variety, to keep them in health and good humour. They must not have sugar or sweet cakes, but plain biscuits—cracknels, for instance, are good for them. Their staple food should be canary and bird turnip (the small brown summer rape) seed, a small quantity of hemp-seed each day, and occasionally, in cold weather, a pinch of maw, or poppy-seed, always to be given while the birds are moulting. When they are building they must have a mixture of hard-boiled egg and finely-crumbled stale bread, with a pinch of the same seed mixed with it every morning. It must always be made and given freshly, or it will turn sour and kill the birds. This food may be dispensed with while the hen is sitting ; but as soon as she is about to hatch, it must be put in the cage for the young to be fed upon.

Canaries ought to have green food three or four times a week, chickweed, groundsel, or lettuce. It is better for them to have a little constantly than a great quantity now and then, when they are apt to eat over-eagerly of it. They should have some whole oatmeal or grits every day ; sometimes a little piece of bread soaked in milk, *not* boiled, unless it is given as medicine ; a little lump of basalt to peck at, or a bit of apple, or pear, or potato, or rice pudding. All these tit-bits are, of course, to be considered as delicacies, to be given by the birds' owner, and they will help very much to win their affection. They require warmth and nourishing food during moulting : if they seem weak, a rusty nail in the water gives them a little tonic, and a small piece of Spanish liquorice is good for hoarseness. By way of physic, I think I have rarely found any of the many nostrums recommended as specifics of much use, excepting boiled milk. If they have been eating too freely of green food, a lump of chalk may be useful. Some bird-fanciers give ants' eggs and a spider occasionally, and it is likely that this animal food would be good for them now and then. Most birds are, to a certain extent, insectivorous in their wild state. Variety in their food is necessary for all birds ; and if they have this, and the seed is good and sound, and they are not exposed to draughts or sudden changes of temperature, they will rarely have anything amiss with them which a warm bath will not cure. Whenever my birds look moping, or when the hen is "egg-bound," and cannot lay her eggs, I give them a bath at 96°, holding the bird in my hand while immersing all but the head in the water for three or four minutes, then taking it out and drying the feet, I put it in the sunshine, or at a little distance from a fire to get dry. Sometimes, if a bird is not fond of bathing, the feet will get clogged, especially during nesting, when the claws get a bit of hair or cotton twisted around them occasionally, and the feet should be cleansed in warm water, and gently freed from their troublesome encumbrance.

An old bird's claws will sometimes grow too long, so that it cannot perch comfortably, and they must be very carefully cut, taking care not to draw blood, or to injure the bird in any way. Whenever possible, it is best to avoid catching the birds, especially if they are wild and fly about in alarm ; but if taught to consider their owner as their friend, they

will generally submit, without much fluttering, to be taken hold of; and illness generally tames them sufficiently to make them quiet when they require to be taken out of the cage to be put into a bath.

Early in spring, when the cock birds begin to fight, the hens should be taken away, and kept apart in another cage till the pairs are put together in March. Some people allow their birds to choose their own mates; but a great deal of quarrelling takes place before this, and two or three gentlemen will sometimes fix their affections on the same lady, and they will get injured in the combats that ensue; besides which, if it be an object to secure good coloured birds, it is necessary to put those together whose colours contrast well: a mealy cock with a jonque hen, or a green bird with a yellow partner. Handsomer birds are obtained by these selections than when two birds of the same colour are paired; and two crested birds should never be put together, the young will probably be bald-headed. It is best to give an old wife to a young cock, and *vice versâ*; and the birds of a family should never be mated together: the progeny will infallibly be weak and unhealthy if this is permitted. Two of my birds were accidentally paired, a brother and sister, and the result was that one of their children was blind, and another deformed. For these reasons it is best not to leave the birds to choose for themselves, but to separate them before any attachment springs up among them. Cages sold as "breeding cages" have a wooden compartment at the top of one end for nest-boxes, and a wired-off partition underneath, into which the young birds may be put when it is desirable to separate them from their parents. There are some advantages in these cages, and the birds which are shy and like retirement prefer them to the open cages; the only objection to them is that they are inconveniently small when a large family is hatched, and that the nest-boxes are necessarily so high that the young birds sometimes fall, when they come out of the nest before they are fully fledged, and are injured thus. On this account I put nest-baskets into my cages, at a little distance from the floor, so that the young birds hop in and out easily; and if the old birds should entangle their feet in the nest (which they sometimes do if the claws are long and they fly out in a hurry), and the young birds are thrown out of it, they are not likely to be so much hurt as if they fell from the greater height. My breeding cages have compartments for the separate pairs, three in each, the centre space being kept for the young birds of each family, that they may be fed through the wires by the old birds, when they have left the nest, but cannot feed themselves. This space is necessary, too, to prevent quarrels, as the birds on each side of the wire partition will sometimes try to fight, and make furious assaults on their neighbours through the bars, or jealousies will arise to break their domestic peace, if, while the hen is sitting, her husband chooses to feed his neighbour's wife through the wires. The pairs should be kept as retired and out of sight of each other as possible. The materials for the nest should be hung up in the cage in a little net; fine moss and cow-hair are best; if cotton wadding is given it is apt to get matted and clogged round the bird's claws. The hen will generally make the nest herself; but some birds are idle about it, and do not take the trouble to do more than to put a little moss or wool into the basket, and then it is as well to make a nest for her; but it is not at all certain that she will allow it to remain in the basket. Some

birds seem to prefer sitting on their eggs without a nest, or are very capricious about its formation, and will undo one day the work of the previous day. It is as well to leave them to their own devices till the young are hatched, and then they may have a little moss or cow-hair put in under them to make their bed softer. The hen generally lays four or five eggs, and sits thirteen or fourteen days, unless she or her mate have a bad habit of eating the eggs. They should be left in the nest, and not touched or interfered with at all, until a fortnight has elapsed after the laying of the last egg ; then, if there are no signs of hatching, the eggs may be put into warm water : if they float the probability is that they are addled, and no young bird in the egg ; if they sink, they may be replaced for a day or two, but if not hatched then, they should be taken away, or the hen will go on sitting uselessly (on dead birds probably). Sometimes a violent jar, caused by the shutting of a door near the cage, or the fall of the cage itself, will kill the birds in the egg, or the mother bird will cause their death by allowing the eggs to get cold, if sitting irregularly. The egg food must be provided in readiness for the hatching ; and it is necessary to watch the birds' proceedings at first, lest they should not feed the young ones ; but very few canaries are unnatural enough to leave them unfed, although they do not like to be overlooked, and, if they are shy birds, will refuse to feed their little ones when they are in sight, so that one has to watch them without appearing to do so. If they feed them once they will continue to do so ; if not, it will be needful to bring them up by hand, giving them the soft egg food with a quill, as with the nestlings before mentioned. A fresh nest must be given if the first nest becomes dirty, and the young birds carefully transferred to it with no more touching than is necessary. Some parent birds will resent any interference with their young, and will desert if they are meddled with ; others will appear pleased at any notice bestowed on them, and will call our attention to their children with great exultation, chirping and flying up to the nest, looking in, and then looking up in our faces as if to say, " Pray admire my lovely infants."

If our birds are as familiar with us as they ought to be, they will exhibit their confidence in our sympathy and make their wants known to us in a very pleasant and expressive manner : if they want fresh food or water they will go down to the glasses and look into them, and then look up at us and chirp ; or if anything is amiss with their nestlings, they will attract our attention to the nest by signals that cannot be mistaken. One bird who wanted materials for her nest went about the cage picking up stalks, and another pulled the hair of any human head that came within her reach, to show what she wanted.

The young birds will generally be out of the nest in about a fortnight during the day, returning to it at night for warmth. The mother bird will often begin to lay again about this time, and must have a fresh nest given her ; and the young ones should be put into the nursery partition, so as to be fed through the wires (or in a small cage tied on to the larger one). They are apt to tease their mother, or to break the eggs, by jumping in and out of the nest while she is sitting. I have sometimes seen three or four little heads peeping out under her wings at once, and occasionally they will sit upon her, which in hot weather is almost too much to endure. The cock bird will feed them while she is sitting, and show them how to feed

themselves. They must have a supply of egg food, crushed seed, and water in their compartment, and by degrees they will become independent of their parents. The first moulting tries the young bird's strength much, and till it is over they must have the same food (egg food and crushed hemp-seed) in addition to their usual provisions. The hen should not be allowed to have more than two broods in the year, for her health's sake: if she goes on laying or sitting, the nest should be taken away from her; and if that hint is not sufficient, she must be separated from the cock till she begins to moult. The young birds should be within hearing of a good songster till after their moulting is over, when they will begin to warble feebly. If a nightingale or woodlark were to be had as music master, they would learn his notes; but I do not advise any one to keep these birds in confinement; they are not fitted for it by temperament or constitution, and their song is much more glad and sweet in their native woods. I had one canary who had learned several nightingale notes, and used to repeat the "*jug, jug*," continually: he would not sing in company with others, but taught the young birds very well from a little distance. They will often learn best when their singing master is out of sight.

Cross-breeding has changed the canary of the present day greatly from the original wild green bird of Teneriffe and the Canary Isles, and the varieties of shape and plumage are endless. There are canary societies and bird-shows now, and prizes are given for birds which excel in beauty or song. They are arranged in different divisions, and connoisseurs talk knowingly of "jonques," "spangles," "mealy birds;" "flaxen," "grey," "cinnamon," and "agate-coloured" canaries; all which have their distinguishing merits. Then there is the German canary, a small, compact, smooth bird, with a sweet but not very powerful voice; and the Belgian, its opposite in every respect, very long and slender, with exceedingly high shoulders and long legs, standing so uprightly on its perch as to give one the idea that it would fall backwards. The Norwich, or London fancy prize canary, is a large square bird, with a massive head, deep orange in plumage all over the body, excepting the wings and tail, which should be black. This at least used to be *the* prize bird, but every season has its fashion in birds as well as in dress. To my mind it is the most beautiful of all the canaries when perfect, but it is very difficult to get one without white or green feathers, or irregularly marked; and a perfect bird will become imperfect after its first two moults. This is the case also with the lizard canary, which should be of a greenish bronze throughout, excepting the crown of the head, which is yellow in the gold-spangled, and white in the silver-spangled lizard. The markings or spangles on the back are very uniform and regular, and there ought to be no yellow or white feathers in the wings or tail: but these generally come when the bird is two years old.

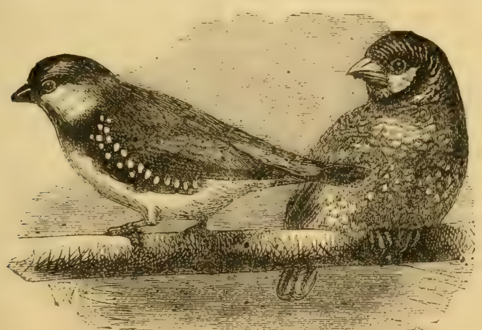
Many of the foreign finches do well in cages or aviaries where a moderate degree of warmth is always preserved: they are very beautiful, and many sing as well as their English relations; but they are rare and expensive. They are fed on the same kind of food—canary, hemp, poppy, rape, millet-seed, &c., and generally require the same treatment as the canary. Many other seed-eating birds are more easily procured, and do equally well in confinement. It is impossible to enumerate half of these, and every year adds to the list of imported foreign birds; I will only mention a few of those which I know personally as domestic pets.

The Java sparrows are very pretty and affectionate, and very happy in confinement; and they are hardy, and can be kept even in an aviary where canaries would live. They are about the size of a bullfinch, and like it in shape; grey in plumage, and so neat and smooth that the feathers seem to be arranged so as never to stand apart from one another, and all appear covered with bloom like that of plums; the head and throat are black, the

Java Sparrow.

cheeks white; the beak thick like that of a bullfinch, but of a bright rose colour. The song is very poor and monotonous. They eat canary and millet-seed, but might well be fed on rice, one should think, as they are most destructive in Java and China in the rice-fields, and are called Paddybirds (*Le Padda, ou oiseau de riz*—Buffon) on that account.

The cut-throat and diamond sparrows are very pretty birds, about the



Diamond and Cut-throat Sparrows.

size of a goldfinch, and their feathers are beautifully marked and spangled; but they are not interesting birds, and their harsh twittering is not agree-

able. Their food is the same as that of the Java sparrows, with the addition of chickweed and cracknels, of which they are fond.

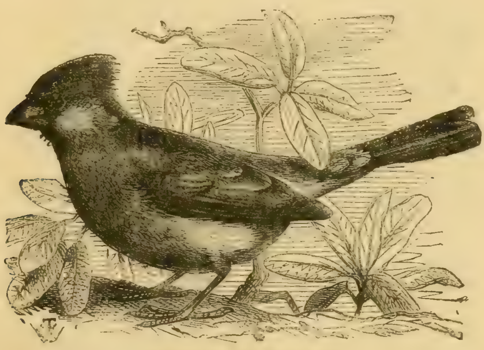
The indigo bird, Dominican, and Whidah bird, are all buntings, easily to be procured, and very beautiful. The former comes from Carolina and the neighbourhood of New York: its plumage is bright blue throughout, excepting the larger quill feathers and tail, which are brown. It may be kept in a bell-shaped cage, and fed on millet, canary, poppy, and bruised hemp-seed. The song resembles that of the linnet.

Whidah Bird.

The Dominican and Whidah bird are both Africans: the latter is chiefly remarkable for its long and curious tail, for the accommodation of which it requires a very large cage. The body is about the size of that of the linnet. The head of the male bird is black, and the throat, wings, back, and tail are of the same colour; the back of the neck is orange, and the breast and upper part of the stomach white. The four outer feathers of the tail are about four inches long, and very broad; the next two are thirteen inches long, broad in the middle, and running almost to a point at the ends; the two centre feathers are glossy, and a little arched, like those of a cock; thread-like filaments spring from the longer feathers and float about with every movement of the bird, which is very lively, and seems to take great delight in bathing and trimming its feathers: it moults twice in the year, and is without its tail from November to May. The female is entirely brown, almost black, but does not acquire its full plumage until it is two or three years old. The Whidah bird has a low, soft, rather melancholy song. It should be fed on canary

and millet-seed and barley-meal, with lettuce, endive, and other green f od from time to time, and will live in confinement from eight to twelve years. The same treatment will answer for the Dominican, but a large bell-shaped cage is more suitable for this bird, whose tail is not so long.

The cardinal grosbeak, or Virginian nightingale, is a very beautiful red bird, with glossy black feathers about the head and neck. It is about eight inches long, of which the tail measures three. The song is varied and constant, and continues all through the year, except while it is moulting. The hen, which is of a reddish-brown colour, is said to sing nearly as well as the cock; and perhaps that is the reason why these birds are better apart—the cock is jealous of his mate's rivalry of voice. Bird dealers have so often pronounced an unfavourable opinion of the cardinal grosbeak as regards his capabilities as a domestic pet, that I was surprised to hear of one which was so exceedingly tame that he would carry his favourite tit-bits to his mistress, and try to make her eat crushed hemp and caterpillars! The bird is naturally, I believe, very

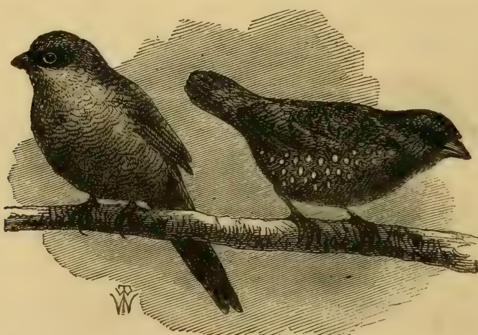


Virginian Nightingale.

nervous and sensitive, so that it would fret and chafe in a shop surrounded by other birds, and its wild fluttering would give the idea that it could never be tamed; but patient kindness and gentleness will make it a most attractive and pleasant pet. It should be fed chiefly on canary-seed, but should have a few hemp-seeds every day, and four or five meal-worms, or spiders, grubs, or caterpillars—some animal food, in short, to keep it well and vigorous. Spanish nuts, almonds, walnuts, and Indian corn, may be given as a treat; and a lump of basalt and a little piece of chalk should be put in the cage, and the bird should always be allowed a bath, and should be kept out of draughts. I give the directions which have been given to me by a lady whose Virginian nightingale has flourished under her judicious care many years. I have never had one myself.

The beautiful little avadavats and waxbills I have kept, and I can thoroughly recommend them as pets for the drawing-room or conservatory. In the latter atmosphere they flourish best, for they are rather

delicate birds, and do not like changes of temperature. The Avadavats are very small red and brown birds, and with their bright red beaks, spreading fan-like tails, and spotted plumage, are exceedingly pretty. They sit in a line on a perch as close as possible together, and are very affectionate. Their song is sweet and soft, and one will stand up and warble for a few minutes, and then sit down, and another will spring up and sing and subside into quietude, and so on. It is the prettiest thing imaginable to see a number of these little creatures in a cage of delicate workmanship, darting about, pluming themselves, washing, and singing, and appearing so thoroughly happy. They live very sociably with Silver Beaks, Cordon Bleus, and Australian, African, St. Helena, Orange, and Zebra Wax Bills, which are about their own size, and require the same food and warmth. They feed chiefly on millet-seed, but will eat canary-seed as well, and must be abundantly supplied with water. It is necessary, however, to take precautions against their being chilled by being too constantly in the bath, especially in winter. They are so fond of



Avadavat and Wax Bill.

washing that they will get into their water-glass, if possible, all day long, and I lost several of my birds from excessive bathing : I could not keep them out of the water, and when the sun was not shining, of course they could not get dry or warm for some time after they had been ducking themselves so thoroughly. I kept them in a cage made on purpose for them, with fine silver wires and glass sides round the lower half of the cage ; but I do not think this answered for them. The glass prevented the floor from getting dry quickly after it had been wetted by the splashing of the water, and it never looked clean for the same reason—it was so constantly splashed. The wires must be small and closely put together, as the birds would get out between the wires of an ordinary cage ; but I think tin wire is preferable to silver, and more easily kept clean. The birds must have a thick covering at night, and never be exposed to chilling draughts. A conservatory or greenhouse, kept at a moderate degree of heat always, is certainly the most desirable abode for these little foreigners.

An article on domestic pets seems scarcely complete without some

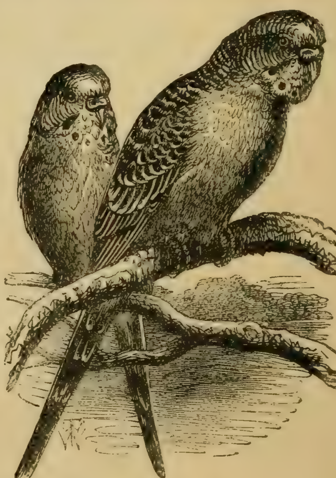
notice of parrots and parrakeets; but there are so many varieties of this tribe of birds, and they come from so many parts of the world, that they require a book to themselves. I can only make a few suggestions for their treatment generally. Those which are natives of tropical climates require warmth and abundance of farinaceous food and fruit. Bread and milk should be the staple prison diet of parrots (the bread should be soaked first in boiling water, squeezed as dry as possible, and then allowed to absorb as much fresh boiled milk as it will hold), adding Indian corn, biscuits, nuts, almonds (not bitter almonds), fruit (hard and soft), peach and plum kernels, cherries; grapes, pears, &c., grain, and seed for the

Grey Parrot and Cockatoo.

larger birds; and the smaller kinds should have hemp, canary, and millet seeds, with fruit. All should have water for drinking and bathing within reach; and if the birds will not go into water, it is well to sprinkle a little warm water on them occasionally, and put them into the sunshine that they may plume themselves and clean their feathers. Great cleanliness is necessary to keep parrots in health, and their feet must be frequently washed if they get dirty and they will not bathe themselves. They are subject to diseased feet, and their perches should be covered with flannel, and the bottom of the cage should have a grating with a drawer underneath it always covered with sand. Lettuce or water-cress may be given

to these birds occasionally; and it is said that a chili-pod given from time to time is useful—when they are moulting they may have one or two cut up small once a week. If they have an attack of asthma they should have a few grains of cayenne-pepper mixed with their bread and milk. Meat, sugar, and sweetmeats, are all unwholesome for parrots.

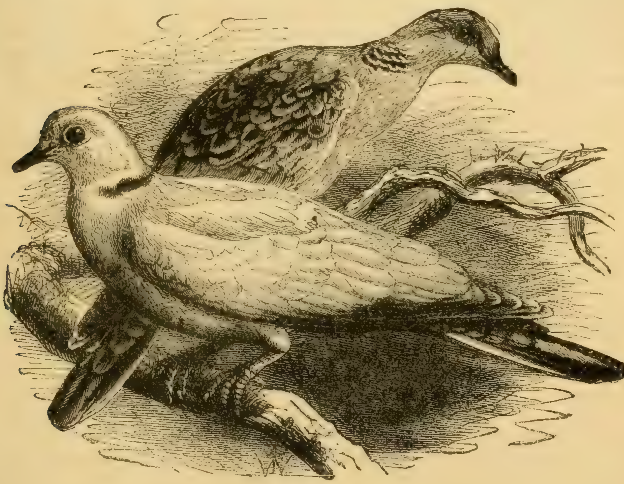
Within the last few years a great number of the Australian grass parrakeets have been brought to England. They were very expensive at first, but I should suppose they must be cheap now, for I hear of *some thousands* being brought over at once for sale. They are very delightful pets, and their plumage is very beautiful: one of the most charming is the warbling grass parrakeet or budgerigar, which is said to breed in captivity. Those which I kept were, I think, confined in too small a cage, and to see them to advantage they should be in a large, or rather a long cage, along which they can run, or in a room or aviary. In their native land they feed in large flocks upon the grass seeds in the plains, and rest during the heat of the day upon the branches of the gum-trees, in the hollows of which they lay their eggs. Their plumage is very beautiful; green is the prevailing colour, but it is very much spotted with black, and the breast and under tail feathers are yellow, and some of the feathers of the wings blue-black. They have bright blue spots on the cheeks, and the only distinctive mark of the sexes is, that the cock bird has bluish nostrils and the hen brown ones. They are very loving birds, and are continually caressing each other, keeping up a constant chirping and chattering all the time. My pair would sometimes flap their wings and utter a harsh disagreeable cry, but I think this was owing to their dislike to the smallness of their cage. I put a cocoa-nut into it in the hope that they may be induced to breed, but they never took any notice of it, except to bite the outside, and I imagined that they ought to have a cage four feet long to live in, and to be left in a much quieter room than mine was; they are shy birds, and I could never succeed in making mine familiar with me—they were never tempted by any dainty I could offer them, and, indeed, never approached any food to which they were not accustomed, so that I could not change their diet: the only treat they had was a bundle of oats, out of which they could pull the grain, and that they appeared to like. I used sometimes to let them out of their cage, and their great delight was to run along the green bars of the Venetian blinds; but they were so crafty that I found it impossible to catch them, and sometimes had to wait till late in the day before hunger induced them to return to their cage, and then they would often pop in and out again before any one could shut the door of the cage. They lived



Australian Parrakeets.

very contentedly in the large winter cage with the canaries, but took very little notice of them, being too much occupied with one another to care for others. The hen is said to lay her two eggs about Christmas, and to be a very attentive mother, but I could not get mine even to enter the cocoa-nut I was told to provide for a nest. These birds seemed to like to get hold of a large piece of gravel to carry about the cage, so I put a piece of charcoal in for them, but I do not think they touched it. I always gave them water, but they did not drink much, and I never saw them bathe, although Australian travellers speak of flocks of them coming regularly every evening to the springs of water. Like the love-birds, which they much resemble, these parrakeets are unhappy alone, and must always have a companion.

This is the case also with doves, which look very disconsolate without a mate, to whom they are constantly cooing. They are pretty, gentle, quiet birds, and easily tamed. The stock dove, ring dove, turtle dove, and collared turtle, are all kept in confinement, but they should all have a great deal of air. If kept in a wicker cage, it should be carried indoors at night (for, being natives of hot countries, they do not bear cold well), and taken out of doors early in the morning. The German peasants keep

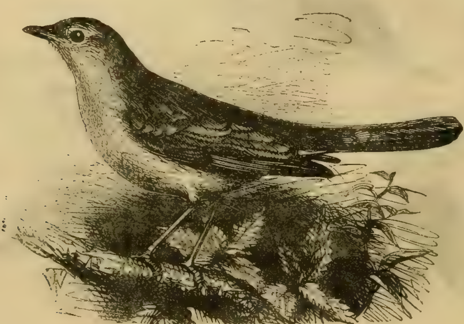


Doves.

doves constantly in their cottages, from a fancy that they cure colds and rheumatism by taking the complaints themselves ; and I believe it is true that doves are subject to the diseases which people shut up in the same room with them have, such as small-pox, swollen legs, and tumours in the feet; but this is probably due to the close unwholesome condition and bad air of the room, which affects birds and human beings alike. They are best kept in a conservatory or aviary, unless they are tame enough to fly

in and out of the house, and return to their cages at night or when they want food, in which case they may be allowed their liberty. They must have plenty of fine dry gravel and conveniences for bathing, and their food should be barley, wheat, pease, vetches, hemp, and canary seed. They like variety in it, and are fond of bread dry or soaked, the seeds of pines and firs, and linseed and myrtle berries. They ought to have bay salt mixed with old mortar or gravel: the salt is good for their throats, which often become diseased. Doves generally have two broods in the year, two young ones at a time, which they feed from their crops. I have been told that they are often unnatural enough to neglect this duty; but I do not think this is generally the case. The young are so dependent upon their parents, that they could hardly be reared by hand. They are not very interesting birds, but have great beauty of plumage, and no disagreeable characteristics to detract from their merits as domestic pets.

It may be remarked by my readers that I have not recommended the nightingales, larks, and many of our most renowned songsters to be kept in confinement. I have not done so, because they are not fitted by Nature to be imprisoned in cages. Those especially which are migratory birds are restless and miserable when the season comes for their flight to other countries; they will beat wildly against the bars of their prison, forsake their food, and gasp for breath, and when quieter, will be very dull and moping for some days. This is one of the difficulties of keeping nightingales, which suffer much from this impulse to migrate. They require a spacious cage, at least 20 inches long, 9 broad, and 12 high; the roof



Nightingale.

should be lined with green baize or some soft material, and the three perches with which it should be provided must be covered with this to protect the birds' feet, which are very tender. They are fond of bathing, but care must be taken that the cage does not become saturated with water. Some nightingales dislike a strong light, and will not sing in sunshine, and they must be humoured and treated very gently. If possible, they should be allowed an unfurnished room to live in, and if the sun enters this freely, and they can fly about among fir branches or other evergreens, with plenty of sand, clean water, and the food they like, they

will be much happier and healthier than in a cage, although, perhaps, they may not sing as well, especially if in company with other birds, as in solitary confinement. They must have ants' eggs and meal-worms daily, if possible ; if not, their food should be roasted bullock's heart, and raw carrot grated, and a little lean beef or mutton, stale bread, and hard egg occasionally, ripe elderberries, and spiders and caterpillars. They need animal food daily, and when moulting require the most nourishing diet, and to be protected from cold and draughts. They are fond of boiled vegetables, and pudding, bread soaked in milk and squeezed dry, and scalded hemp-seed crushed, and various pastes are given to them and other soft-billed birds, which seem to agree well with nightingales.

The Blackcap, which is sometimes called the Mock nightingale, redstart, whitethroat, and other warblers, require much the same treatment. The blackcap should never be without fruit of some kind, cherries, currants, raspberries, elderberries, or ripe apples. For all these birds, Mr. Sweet recommends hemp-seed soaked in boiling water and bruised, mixed with scalded bread (made without salt), and a little lean meat finely minced. This must of course be given fresh every morning, and the birds should have hard egg also. Other bird-fanciers recommend boiled carrot or beetroot mashed, and pastes made of white bread twice baked and pounded, with milk poured upon it, and mixed with barley meal or wheat meal, and the "German Paste" made as follows :—Heat two table-

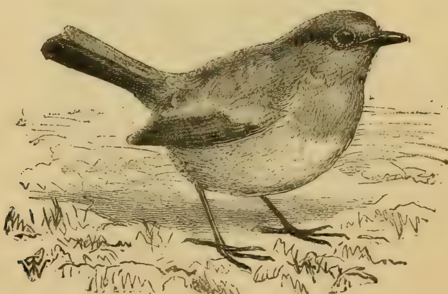
Blackcap.

spoonfuls of melted lard, free from salt, in a saucepan till nearly boiling ; stir into this while near, not *on*, the fire, four tablespoonfuls of treacle, and three pints and a half of pea-meal till the mixture becomes a stiff crumbly paste ; a few more seeds may be mixed with this, or a little stale bread grated, or well boiled mealy potato can be added to it when given to the birds. It will keep a long time in a glass jar, and both seed-eating and soft-billed birds will thrive on it. If birds of various kinds are kept together in a room or aviary, it is necessary to give some general food which those that live upon seeds, insects, berries, and fruit, may equally enjoy, and these pastes are suitable for all. The seed-eating birds have a mixture of seeds as well, and the insectivorous birds should be supplied with meal-worms, cockroaches, and crickets, easily procured from a baker's shop, and dried ants' eggs. These can be obtained in summer by un-

covering a nest of the large wood ant, and placing the eggs on a cloth in the sun, with the corners turned up over small leafy branches. The ants, in order to protect them from the sun, will carry their eggs under shelter, and thus they are procured free from dirt and from the ants also.

Gold-Crested Wren.

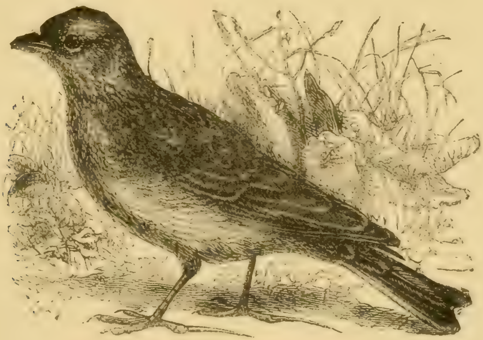
They may be dried in a frying-pan on sand over a slow fire, and kept in the sand in a jar all through the winter. All birds like them. The most beautiful of our small birds, the gold-crested wrens, delight in them, and must have them as well as bread-and-milk or soaked biscuit beaten up with milk; but these are such delicate birds, and suffer so much from



Robin.

cold, that it is very difficult to keep them alive through the winter. They might do well in a plant case lined with a fine woollen net, with a myrtle or tiny fir tree to perch upon. They, like the robins, are quarrelsome birds, and do not live well with others in a confined space. Titmice are such murderous little creatures, that it is cruel to put them with other birds, for, besides fighting with them continually, they will hang on to them and hug them round the neck, to rob them of any dainty food they are eating, to which they may take a fancy, and torment them exceedingly. Robins and larks can only be kept happily in an outdoor aviary. This

should be constructed of iron and glass upon a basement of brick or stone, with an earthen floor beaten hard, and be warmed by pipes, so as to keep up an even temperature in cold weather. The glass should have wire within it, so as to be opened freely in summer, and be shaded by blinds at pleasure, unless it is well sheltered by creeping plants without, and should be provided with wooden shutters for the winter. Within the aviary there should be a small fountain playing in the centre, with a basin for the birds to drink and bathe in, and plenty of dwarf shrubs and creepers for them to build and hide in. It is best to keep these in pots when practicable, in order to change them for fresh shrubs when they become spoiled. The seed should be put in bird-hoppers



Skylark.

against the wall, and there should be shelves and perches for the birds to roost on, and in the breeding season, wicker baskets and boxes for them to build in. The floor of the aviary must be kept covered with sand and small gravel, and old mortar well dried and bruised is good for the birds also. Of course, anything belonging to the aviary must be as clean as possible, and the water always fresh and cool. In fitting up aviaries or cages, the natural habits and tastes of the birds which are to live in them must be carefully considered—their comfort is sometimes sacrificed to ornament—and they should always have shade as well as sunshine provided for them, and snug corners for those who love retirement. Care must be taken to exclude fog and damp, and in sweeping out the aviary, to avoid raising much dust, from which the sensitive lungs of many of the birds would suffer exceedingly. The air from a close stove or any noxious gas too, would cause them much discomfort, if it did not stop their respiration altogether, so that means must be taken to secure good ventilation.

If we keep birds in captivity at all, it is our bounden duty to keep them as healthy and happy as possible ; and unless we are well acquainted with their several wants and characteristic tastes, we cannot expect them to be our fond familiar friends, or to delight us with the exhibition of their natural beauties and talents. We must love our little prisoners and consult their happiness if we would entice them to treat us as friends, rather than gaolers.

PRESCRIPTIONS

For SLIGHT FAMILY AILMENTS, REMEDIES *in* CASES *of* ACCIDENTAL POISONING, ETC.

BY A MEMBER OF THE ROYAL COLLEGE OF SURGEONS.

Boils and Carbuncles. *Symptoms.*—Boils are distinguishable from carbuncles by their smaller size, by their conical shape, inflamed base, and tendency to form matter at the point. Beneath the matter is a portion of dead tissue, or "core."

Carbuncle is a large and flattened compound boil, without the tendency to present a conical point. A carbuncle tends to form matter, and opens at various parts of its surface. At these points the skin gives way, presenting a riddled aspect, gradually running into one sore. The inflamed base of a carbuncle extends wider than that of a boil, and has a harder feel, resembling indeed the consistence of brawn.

The pain of a carbuncle is often very severe. The constitutional disturbance is marked by a low state of the vital powers.

Treatment.—A small boil requires no treatment beyond protection from friction, by diachylon or soap plaster. If, however, it be large, inflamed, and painful, water dressing or warm poultices should be applied, until the core has sloughed out. It should then be dressed with zinc ointment.

A carbuncle should, in the first instance, be kept well covered with the water dressing protected by oil silk, until the surface begins to give way, and presents numerous small yellow points of matter; it should then be dressed with strips of lint smeared with the yellow basilicon ointment, covered outside with linen, moistened with Condy's fluid or carbolic oil, if there be any offensive odour. After the slough of dead tissue beneath the skin has separated, the sore may be dressed with zinc ointment.

The diet should be full and nutritious, with a moderate allowance of stimulants.

The medicines that will be useful will be quinine, compound tincture of bark, muriated tincture of iron, &c.

Bruises. The variation of the colours of bruises is owing to changes going on in the blood which has been effused under the skin by violence. A bruise generally goes through all the various tints from black to green and yellowish-green. Bruises sometimes, from the large quantity of blood effused, become inflamed and form abscesses.

Treatment.—To prevent or diminish discoloration from bruises, it is as well to apply cold or warm water as soon after the violence has been done as possible. To allay the swelling or inflamation which may follow, cooling lotions should be used. A mixture of tincture of arnica and water has been strongly recommended, but a mixture of spirit and water, or spirit, vinegar, and water, will be found quite as efficacious.

Spirits of wine, 1 oz.
Vinegar, 1 oz.
Water, to 4 oz.

Graze or Abrasion.—An abrasion of the skin, or what is commonly termed "barked skin," is the simplest form of wound. It consists

in the superficial skin being rubbed off by violence. This form of injury of course varies in severity as the amount of violence varies.

Treatment.—For a slight abrasion a piece of linen or lint wetted with cold water, and covered with oil-silk or gutta-percha tissue, will generally be sufficient dressing. Or it may be covered with goldbeater's skin.

For a graze or bruised wound of considerable extent or depth, a dressing of carbolic acid and oil will be found a very serviceable application. Take of carbolic, 1 part; best olive oil, 28 parts—apply on lint or soft linen.

In a majority of cases any simple application that will protect the denuded surface, while it is being skinned over, is enough—*e.g.*, spermaceti ointment, spread on linen, will be all that is required. One method of treatment for abrasions is to apply a piece of dry lint, and let the blood soak into it. This may be allowed to dry on the sore, and thus form an artificial scab; or the lint may first be soaked in compound tincture of Benzoin, known as Friar's Balsam.

Burns and Scalds. The effect of these will vary with the extent of surface, or the depth of skin injured or destroyed. Recovery, moreover, must depend greatly upon the state of health at the time of the accident. Under ordinary states of health a superficial scald or burn, not destroying the skin below the surface and not involving more than half the superfices, may be recovered from. Less than half of this extent of burn may, however, be fatal, if it extend to the true skin and the muscles below.

Burns as a rule destroy more than scalds. Scalds usually form blisters and go no deeper, but burns may char the deeper skin and the muscles beneath; they are, therefore, the more dangerous of the two.

Treatment —Should the burn have resulted from the clothes catching fire, they should *carefully* be removed, so as not to break the blisters which may be forming or formed, lest violence be done to the raw skin beneath, and, for the same reason, pieces of the clothing that stick to the surface should not be removed at the time. If the burn or scald be extensive, some stimulant wine and water should be given at once to diminish the effect of "shock."

Treatment.—The principle to be observed in the treatment of burns and scalds, is to cause a gradual diminution of heat in the part, not to allow it to cool too quickly. This is effected by protecting the burnt or scalded part from the air, by immediately dredging with flour, or covering with cotton-wool or oil. If the case is a slight one, these dressings may be left on for a day or two; but if it be more severe the damaged parts should be dressed with lint, spread with basilicon or resin ointment, or a mixture of equal parts of that ointment and spirits of turpentine.

Another useful lotion for application to burns and scalds of slight extent consists of "carron oil," or—

Lime-water, 1 part,
Linseed-oil, 2 parts,

well shaken together, and applied by means of strips of lint, or soft linen rag soaked in it, and changed twice a day.

The Blisters: how to be treated.—It is generally advisable not to cut the blisters which may be formed, as they protect the true skin under them; but if the base of the blister shows symptoms of inflammation, it is as well to evacuate the contents, but even then to do it by means of a small prick, and to leave

the skin on, so that it may protect the raw surface from the air.

The black char of skin that is sometimes left should be poulticed with bread, or linseed meal and bread, till the slough separates. When this has taken place, there is left a surface of what appear to be little mounds of flesh, and these give out a discharge of matter. They are called granulations, and are the commencements of the process of healing, At times these granulations grow very rapidly and abundantly, rising above the level of the adjacent skin. This is what is commonly meant by "proud flesh." Their growth may be checked by gently touching them with a stick of nitrate of silver, and dressing the surface with oxide of zinc ointment.

Burns between the fingers, or in any place where two contiguous surfaces are likely to come in contact, should be separately dressed, and great care should be taken to keep the granulating surfaces apart, or they may grow together and produce deformity.

Treatment of the cicatrices.—Scars are often left after extensive burns. These scars contract, and have been known to produce great deformities, such as the head being pulled down on the shoulder, the arm bent at the elbow, the leg contracted at the knee. This may generally be remedied by keeping up gentle movement, or by keeping the limbs extended until the process is complete.

Opiates.—If there be much pain, it will be advisable to give opium, in the form of the tincture, as it will also allay nervous excitement.

Tincture of opium, 10 minims.
Water, 1 teaspoonful.
Every four hours.

This dose, it should be borne in mind, is for an adult person.

Burns from Chemicals,—The destructive chemicals most likely to produce these accidents are—sulphuric acid, or oil of vitriol; nitric acid, or aqua fortis; ammonia, and hydrofluoric acid; strong carbolic acid, and chloride of zinc. In cases of burns from any of these the parts should be well washed with water, in which a little bicarbonate of soda is dissolved, or soap and water in the case of the acids. Afterwards treat as in a case of inflammatory ulcer or ordinary burn.

Gunpowder Burns.—Explosions of gunpowder cause destruction of skin, and resemble burns or scalds in their effects. They should be treated in the same manner as burns, first removing particles of carbon by means of a soft sponge and warm water.

The diet in severe burns should be supporting. Some stimulant is usually advisable.

Chapped Hands. After washing the hands, and before drying them, pour over the backs of them some glycerine and water (equal proportions), smear it over them, and then quickly dip into water and dry the hands gently, so as not entirely to wipe off the glycerine.

Chilblains. The best remedy for these, when not broken, is to paint them twice a day with strong tincture of iodine.

A liniment of equal parts of extract of lead and spirits of turpentine is also very useful.

If inflamed and broken, they should be poulticed and dressed with some simple ointment.

Cold. *Remedy for.*—A useful means of cure in catarrhal bronchitis or severe "cold," is the inhalation of ammonia; thus, put a teaspoonful of spirits of salvolatile in a three-pint jug, with a wide mouth, then fill the jug half full with boiling water, and holding the face over the mouth of the jug, inhale the

steam as long as it continues to be given off.

Child-crowing. *Spasms of the Glottis. Symptoms.*—This is a convulsion or spasmodic affection of the upper part of the windpipe, causing sudden difficulty of breathing, and accompanied with a shrill crowing noise resembling that of a young bantam cock. The paroxysm comes on almost instantaneously, very often after a fit of crying; or the child will start up out of its sleep and be seized with the crowing noise. It has been known to be suddenly fatal without the slightest warning. This affection occurs in weakly children, and in apparantly fine healthy children of a strumous constitution. The paroxysm may be excited by any circumstances that depress the constitutional powers or derange the digestive organs. Thus teething, or injudicious feeding, may excite one.

Child-crowing is very often confounded with croup, but it is a distinct affection, more alarming in its character, and requires distinctive treatment. Croup is a catarrhal affection in the first instance, and is frequently preceded by the symptoms of a cold on the chest. The paroxysm of croup, although it may be sometimes of a spasmodic character, does not as suddenly pass off as does child-crowing, but leaves a rough, difficult kind of breathing and hoarse, croupy cough after it. The croupy sound is rather of a rough sawing character, and accompanies both inspiration and expiration. Child-crowing occurs only in inspiration.

Treatment.—Whatever treatment is to be adopted must be put in force in the intervals of the attacks, as there is no time then to do anything more than to sprinkle cold water on the face.

If the paroxysms recur at short intervals, four or five drops of chloric ether should be given every two or three hours. If there be any known disordered function, it should be corrected if possible. Thus, if the bowels be costive, some mild aperient should be administered. If the gums are full and swollen from teething they should be lanced. The condition of the general health is, however, by far the most important indication to be followed, and herein is the reason why it is specially necessary to be clear in distinguishing the disease from croup, because the treatment of the two is opposite.

In child-crowing, the child should be out of doors as much as the weather will permit, and the higher and drier the situation the better. The most nourishing diet, consistent with a care not to overload the stomach, should be allowed.

The following should be given:—
Take of

Syrup of bromide of iron, $\frac{1}{2}$ oz.
Simple syrup, $1\frac{1}{2}$ oz.

Mix. Give a teaspoonful three times a day to a child over two years of age, and half the quantity to one under that age.

Concussion of the Brain. *Symptoms.*—This condition may be the result of either a fall, or blow on the head, or it may be occasioned by a violent jerk to the body, especially to the lower part of the spine. After one or other of these accidents, the symptoms of concussion will be:—Unconsciousness, and loss of power of moving, a small and feeble pulse, the pupil of the eye insensible to light, the complexion pallid, skin cold, and there may be vomiting. Convulsions, also, are likely to occur if a child is the subject of concussion.

Treatment.—Small quantities of stimulants, such as wine, brandy, ether, or salvolatile in water, should be given every half hour, if the patient can swallow, until signs of

reaction begin to show themselves. This will be known by the restoration of warmth and colour to the surface of the body, together with increased force in the pulse, and gradually reviving consciousness.

From this point, health may be re-established, or inflammation, or some other affection of the brain, may follow. Hence the importance of cautious and judicious administration of stimulants during the stage of depression which follows the shock.

Convulsions, or Fits, are, strictly speaking, symptoms, not a disease; thus they are seen in the low weak state of the termination of disease of various kinds; they are seen in hysterical excitement, and are caused generally by the disturbance of dentition.

Treatment.—At the time of the convulsions but little can really be done—cold water may be dashed on the face, and mustard plasters applied to the soles of the feet and calves of the legs.

In the fits of children—the child's body being immersed in a hot bath—cold water should be poured on the head from a jug held at a good height. The hot bath, however, cannot be repeated if the fits recur with frequency; the cold water can always with safety be poured on the head.

Hysterical convulsions, or fits, also require the free application of the cold douche on the face and head.

The curative treatment of convulsions can only be attempted during their intervals, according to their several causes.

Corns. Repeated soaking of the feet in hot water and paring down the corn with a sharp knife, then applying nitrate of silver, and afterwards paring off the hardened black skin. Corn-plasters, having a hole in the centre, give great relief also in wearing.

Soft-corns are relieved by soaking in warm water, and the subsequent application of nitrate of silver. A thick plaster, to take off unequal pressure, is extremely serviceable.

Croup. This is a disease which is alarming from the suddenness of its attack and the rapidity with which it runs its fatal course if unchecked; but, on the other hand, in the majority of cases, it is easily checked if the treatment begins immediately it occurs.

Symptoms.—The following is generally the course of the disease:—A child is put to bed in its ordinary health, apparently, or it may have a slight cold, and a cough a trifle rough, but not enough to excite attention to it. After a variable time the child wakes up with a hoarse, ringing, rasping cough and difficulty in breathing, and countenance expressive of its trouble; each inspiration and expiration being attended with a rough metallic tubular sound, and the voice masked or obliterated by a harsh, hoarse croaking vocalization. The cough is dry, harassing, and unattended with expectoration in the outset, but after a while some portions of membrane-like mucus may be coughed up. The pulse becomes rapid, the skin hot, the countenance more and more distressed, and if relief be not afforded, the patient becomes drowsy, the complexion becomes blue, and the little patient may die from suffocation within forty-eight hours. Happily, however, this is not the most common course of the disease, if the *treatment* be prompt and active.

The first thing to be done is to give a teaspoonful of ipecacuanha wine every ten minutes until vomiting occurs. Ipecacuanha wine is preferable to antimonial wine, as the latter is too depressing.

[N.B.—Where children are sub-

ject to croup, ipecacuanha wine should always be at hand.]

Meanwhile, a hot bath should be prepared, and used as quickly as possible ; and while in the hot bath a wet sponge, sprinkled with mustard, should be held on the upper part of the chest and front of the neck.

After the vomiting has subsided, small doses of the ipecacuanha wine (from five to fifteen drops, according to the age of the child) should be continued every three hours, until the hoarseness in the breathing and voice ceases and the cough becomes loose.

The atmosphere of the bedroom should be kept warm and moist by steam from a pipe or spout of a kettle. The temperature should not be allowed to fall below 60°, if possible.

The diet light and simple.

If, however, within twelve hours there be not a decided improvement, small doses of calomel should be given also, and the front of the neck should be painted with blistering liquid.

As a last resource, supposing these remedies are not at hand or obtainable, and the disease be making rapid strides, life may be saved by applying scalding water to the neck, holding it there on a sponge or flannel for a minute at least. This is a most extreme and violent means, but it is one by which the writer has seen a life saved.

Diarrhœa. There is a common form of this disorder, which appears very often in hot weather without any other indication, and which if neglected will lead to fully-developed cholera, if that disease or its causes be at the time prevalent ; while, on the other hand, it is easily arrested if taken in time.

Treatment. — For an ordinary attack of diarrhœa — not arising from any known cause, such as irregularity of diet—a dose of the common chalk mixture (one ounce) with a drachm of tincture of catechu, repeated every three or four hours, will generally prove sufficient. If otherwise, three or four drops of creasote mixed with a teaspoonful of spirits of salvolatile in a wineglass of water, will check it.

If the diarrhœa be profuse, and attended with much pain, a single dose of one grain of opium (taken as a pill) will often be sufficient for the purpose of relieving pain and arresting the complaint. This dose is for an adult only.

Diarrhœa occurring in infants and young children is best controlled by one or two teaspoonsfuls of chalk mixture, given after each loose purge.

If it prove obstinate, the following will most probably be efficacious :—

Take a few chips of logwood, and boil for half an hour in half a pint of water. Mix two ounces of this decoction with half a drachm of powdered alum, and enough powdered sugar to sweeten it, and give a teaspoonful after each action of the bowels.

Dog Bites. These are very much, though somewhat unnecessarily, dreaded, on account of the fear which exists that they may be followed by hydrophobia. When it is considered how many people are bitten by dogs, and how few people have hydrophobia, it will be seen of what groundless nature is that fear.

The best method of treatment which can be pursued in dog bites is to make a free application of lunar caustic to the bite. Sometimes (if the dog be known to be undoubtedly rabid) it might be recommended that the part bitten should be removed by incision, but as for this it will be advisable to have the help of a surgeon, it is better in his absence

to apply a stick of nitrate of silver freely.

Drowning, or Suspended Animation. The following instructions, compiled by the Royal National Lifeboat Institution, are the result of a wide field of experience :—

Restorative Treatment. — Send immediately for medical assistance, blankets, and dry clothing, but proceed to treat the patient instantly, on the spot, in the open air, with the face downwards, whether on shore or afloat ; exposing the face, neck, and chest to the wind, except in severe weather, and removing all tight clothing from the neck and chest, especially the braces. The points to be aimed at are—first, and immediately, the restoration of breathing ; and secondly, after breathing is restored, the promotion of warmth and circulation. The efforts to restore breathing must be commenced immediately and energetically, and persevered in for one or two hours, or until a medical man has pronounced that life is extinct. Efforts to promote warmth and circulation, beyond removing the wet clothes and drying the skin, must not be made until the first appearance of natural breathing. For if the circulation of the blood be induced before breathing has recommenced, the restoration to life will be endangered.

To Restore Breathing.—Place the patient on the floor or ground, with the face downwards, and one of the arms under the forehead, in which position all fluids will more readily escape by the mouth, and the tongue itself will fall forward, leaving the entrance into the windpipe free. Assist this operation by wiping and cleansing the mouth.

If satisfactory breathing commences, use the treatment prescribed below to promote warmth. If there be only slight breathing or no breathing, or if the breathing fail, then, to excite breathing, turn the patient well and instantly on the side, supporting the head ; and excite the nostrils with snuff, hartshorn, and smelling-salts, or tickle the throat with a feather, if they are at hand. Rub the chest and face warm, and dash cold water, or cold and hot water alternately, on them. If there be no success, lose not a

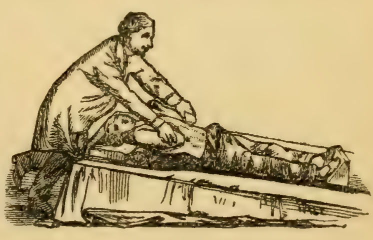
moment, but instantly—to imitate breathing—replace the patient on the face, raising and supporting the chest well on a folded coat or other article of dress. Turn the body very gently on the side and a little beyond, and then briskly on the face, back again ; repeating these measures cautiously, efficiently, and perseveringly, about fifteen times in a minute, or once every four or five seconds, occasionally varying the side. On each occasion that the body is replaced on the face, make uniform, but efficient pressure, with brisk movement on the back between and below the shoulder-blades or

bones on each side, removing the pressure immediately before turning

the body on the side. During the whole operation, let one person attend solely to the movements of the head and of the arm placed under it. Whilst the above operations are being proceeded with, dry the hands and feet, and as soon as dry clothing or blankets can be procured, strip the body, and cover, or gradually reclothe it, but taking care not to interfere with the efforts to restore breathing.

Should these efforts not prove successful in the course of from two to five minutes, proceed to imitate breathing by Dr. Silvester's method, recommended by the Royal Humane Society, as follows :—Place the patient on the back on a flat surface, inclined a little upwards from the feet; raise and support the head and shoulders on a small firm cushion or folded article of dress placed under the shoulder-blades. Draw forward the patient's tongue, and keep it projecting beyond the lips—an elastic band over the tongue and under the chin will answer this purpose, or a piece of string or tape may be tied round them, or by raising the lower jaw the teeth may be made to retain the tongue in that position. Remove all tight clothing from above the neck and chest, especially the braces. To imitate the movement of breathing :—Standing at the patient's head, grasp the arms just above the elbows, and draw the arms gently and steadily upwards above the head, and keep them stretched upwards for two seconds. (By this means air is drawn into the lungs.) Then turn down the patient's arms and press them gently and firmly for two seconds against the sides of the chest. (By this means air is pressed out of the lungs.) Repeat these measures alternately, deliberately, and perseveringly, about fifteen times in a minute until a spontaneous effort to respire is perceived, immediately upon which cease to imitate the movements of breathing, and proceed to induce circulation and warmth.

Treatment after natural Breathing has been restored.—Commence rubbing the limbs upwards, with firm, grasping pressure and energy, using handkerchiefs, flannels, &c. (By this measure the blood is propelled along the veins towards the heart.) The friction must be con-



tinued under the blanket or over the dry clothing. Promote the warmth of the body by the application of hot flannels, bottles, or bladders of hot water, heated bricks, &c., to the pit of the stomach, the armpits, between the thighs, and to the soles of the feet. If the patient has been carried to a house after respiration has been restored, be careful to let the air play freely about the room. On the restoration

of life, a teaspoonful of warm water should be given; and then, if the power of swallowing have returned, small quantities of wine, warm brandy and water, or coffee, should be administered. The patient should be kept in bed, and a disposition to sleep encouraged.

Appearances which generally accompany Death.—Breathing and heart's action cease entirely; the eyelids are generally half closed, the pupils dilated, the jaws clenched, the fingers semi-contracted, the tongue approaches to the under edges of the lips, and these, as well as the nostrils, are covered with a frothy mucus. Coldness and pallor of surface increases.

Cautions.— Prevent unnecessary crowding of persons round the body, especially if in an apartment. Avoid rough usage, and do not allow the body to remain on the back, unless the tongue is secured. Under *no* circumstances hold the body up by the feet. On *no* account place the body in a warm bath unless under medical direction, and even then it should only be employed as a momentary excitant.

Ear-ache. *Symptoms.—Deafness, Pain and Noises in the Ear*, are often produced by the mere accumulation of wax in the ear.

Treatment.—It will generally suffice to clear out the passage by syringing. A large syringe and plenty of water should be used. If not relieved in this way, the application of repeated mustard plasters behind the ears will have a good effect.

Fainting. *Swooning* occurs generally from sudden shock, or from large or sudden loss of blood, or any other cause of depression, mental or bodily, such as profuse diarrhœa and affections of the heart.

Treatment.—The patient should be laid flat on a couch or on the ground, with the *head as low as possible;* the face should be sprinkled or dashed with cold water, free access of fresh air being secured. If able to swallow, let some stimulants be given, such as a small quantity of wine, brandy, or spirits of salvolatile, and apply strong smelling salts to the nostrils.

Headache. There are few more distressing complaints than a severe headache, few more puzzling to account for in point of suddenness and intensity, and in the rapidity of their disappearance. A "nervous" headache, for instance, comes suddenly upon one, and disables us from our duties, and may perhaps be dispelled, as it were magically, by a cup of tea, or a spoonful of spirits of salvolatile.

This, however, is rarely the extent of headache. It is not a disease of itself essentially, but is the indication of some morbid condition, it may be only temporary, of the brain or of its coverings. As such, it is often a persistent symptom, and the source of inexpressible suffering, more especially if it be the result of some structural disease within the brain or skull.

There are, therefore, various kinds of headache—the nervous, congestive, neuralgic, rheumatic, bilious, &c.

The *nervous headache*, arising from various causes of debility, may, as already mentioned, be very short-lived, and yields readily to stimulants and antispasmodics.

Congestive headache is of a character distinct from the preceding, as it does not generally come on so suddenly, is not amenable to the same treatment, but requires the reverse—viz., purgatives and low diet. This form proceeds from constipation, from over-use and exertion of the brain.

Bilious headache, or *sick headache*, differs very little either in origin or treatment from the preceding, and requires similar treatment.

Neuralgic headache is sometimes also much relieved by the external application of sedatives. The Belladonna liniment of the British Pharmacopœia applied freely over the surface of the forehead, or on the back of the neck, frequently gives great relief. Care must be taken that the skin is entire. It would not do, for instance, to apply any sedative or narcotic if the skin be tender from a blister, or leech-bites.

Indigestion (Dyspepsia). *Symptoms.*—Various kinds of pain in the region of the stomach, which occur soon after meals. These pains are also sometimes felt between the shoulders and in the back, flatulency causing some distension of the bowels; pain that is called "heartburn," nausea, and sometimes vomiting, headache, disturbed sleep, palpitation of the heart, and other sympathetic inconveniences, also occur.

Among the chief causes of this disorder of the stomach is the abuse of stimulating liquors, or of narcotics such as tobacco and opium, the use of too highly seasoned or rich food, sedentary habits, and want of proper exercise. Mere weakness of the system, in which the stomach will partake, is often a cause of indigestion.

Treatment.—The main object in the treatment of indigestion is to find out what is the cause of the disorder. This being done, care should be taken to avoid those causes, as above-named. Urgent symptoms, such as acrid eructations, heartburn, flatulency, and pain, may be relieved by bicarbonote of soda, or potash, or by carbonate of magnesia, *e.g.*:—

Bicarbonate of soda, 120 grs.
Tincture of rhubarb, 3 drms.
Peppermint water, 3 oz.
Infusion of gentian, to make 6 oz.

Mix. One tablespoonful after every meal, or two tablespoonfuls morning and evening, will probably prove curative.

The diet should consist of light and easily-digested substances. Care should be taken to avoid those articles which experience has shown the sufferer to be excitants of indigestion.

Splinters, Thorns, &c. These should be removed if possible by the use of forceps. If they are left in they may cause inflammation, and the formation of abscesses, or gatherings.

If the foreign body cannot be extracted, a linseed-meal or bread-poultice should be applied. Matter will probably form, and may require to be let out by a puncture, in which case most probably the thorn or splinter will be evacuated at the same time. The inflammation will begin to subside as soon as this has occurred.

Stings of Insects, &c. *Symptoms.*—The stings of wasps or ants or bees, as indeed do most of the bites of insects, present very much the appearance of what are called poisoned wounds. The history of the case will generally be that the patient has suddenly felt a very sharp pain in the part affected, though, perhaps, he has not noticed any unusual appearance about it. Within a short, but variable, period, there is a feeling of irritation about the spot, which rapidly becomes red and swollen, and sometimes is acutely painful. On close examination, it will be found that there is a small speck about the centre of the inflamed part, and in this the sting of the insect is sometimes found. The severity of the symptoms will

of course vary, according to the state of health, or the constitution of the patient. The inflammation may be confined to a small circumscribed spot, or it may spread over a whole limb, and be attended with signs of prostration.

Treatment.—If the sting have been left in, as it usually is by wasps, it should be carefully extracted, if it can be got hold of, by forceps or tweezers. If there be simply a small red irritable spot, it will be sufficient to dress it with a cold evaporating lotion, such as the following:—

Vinegar, 1 oz.
Spirits of wine, 1 oz.
Water, 4 oz. Mix.

This should be kept constantly applied, by means of a piece of lint or soft linen rag.

Spirits of salvolatile is also very useful for local application in slight cases of stings.

Should however the inflammation spread much, poultices of linseed-meal should be applied.

Should the wound have been inflicted by a snake or other venomous insect, and the system be at all affected, if the patient seem faint or prostrated, stimulants should be given freely, thus:—

Spirits of salvolatile, 1 drm.
Water, to 1 oz.,

Every hour, or brandy and water, if the ammonia be not at hand.

If the bite proceed from some animal, whose bite is known to be of a dangerous nature, nitrate of silver should be freely applied to the wound as quickly as possible.

If the wound be on a limb, it will be as well to tie a handkerchief or other ligature tightly round it above the part bitten.

The venomous effects of certain snake bites, as that of the *cobra di capello*, are so rapid in their development, that unless speedy or immediate aid be rendered, the victim will stand but little chance of recovery.

The bite of the adder is occasionally followed by very serious symptoms. The bite, or rather the stings, of certain scorpions, are often of a severe nature. In nearly all cases of snake-bite, the symptoms consist in a fearful state of depression, during which, unless the strength be supported, the patient will sink.

In India, there is largely used for snake bites a substance called *Eau de Luce*, which is a solution of ammonia with oil of amber. This is given in teaspoonful doses every five minutes; and instances are on record in which life has often been saved by it.

If the wound be inflicted on one of the limbs, a ligature should be very tightly tied round it above the wound.

The object of the treatment, as above stated, is to support the strength of the patient until the poison shall have passed out of the system.

Sunstroke. *Symptoms.*-These resemble the symptoms of congestion of the brain, and come on occasionally with great suddenness after exposure to the direct heat of the sun. In other cases the symptoms are slower in their approach, and in children resemble those of affection of the brain from teething.

Treatment.—Apply cold to the head, and mustard-plasters to the soles of the feet and calves of the legs, giving repeated moderate doses of stimulants internally at the same time.

Swallowing Foreign Bodies. It often happens that children swallow money, or other hard substances, such as pins, etc.

In these cases, if the substance be completely swallowed, it should

be left to take its course through the stomach and intestines. The custom of giving purgatives in such cases is altogether contrary to physiological principles, as the intestinal movements will more safely carry them through than if violently urged by physic.

Vaccination is the only real protective we have from the ravages of small-pox. This is proved by the following facts, among many others: In proportion as vaccination is *properly* and efficiently performed, so the mortality of small-pox is reduced. Secondly, by the freedom from infection which is enjoyed by *properly* re-vaccinated persons in constant attendance upon, and actual contact with, small-pox patients. There has never been a case of small-pox among the nurses or the attendants at the Small-pox Hospital, Highgate, within a period of considerably over thirty years. This is simply because they are all *properly* re-vaccinated before they enter upon their duties.

We have used the expression, "*properly vaccinated.*" It will be as well to explain what is intended thereby.

"*Properly* vaccinated" does not only mean to be vaccinated during infancy, as the law compels, but it also implies re-vaccination, performed at the period of puberty—that is, on or about fifteen to seventeen years of age.

During a late severe epidemic of small-pox in England (1870-1871), it has been noticed that no persons who have been *properly* vaccinated and re-vaccinated have taken the disease.

There can be no doubt that diligent and careful vaccination and re-vaccination would in time extirpate small-pox.

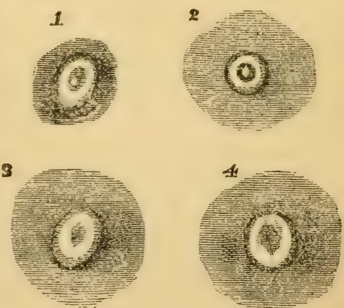
Mode of vaccinating.—The operation of vaccination is simple, but so highly important that no care bestowed upon its performance is thrown away.

The following instructions will be sufficient if carefully followed:—

Select an arm of a vaccinated infant that has good vesicles on the eighth day, *i.e.*, the day week on which the lymph was inserted. Then with a *perfectly clean* lancet make several punctures in the clear part of the vesicles, avoiding the red border of inflamed skin, so as not to draw blood. A clear watery fluid will ooze out in beads.

Take off some of this clear fluid on the point of the lancet, and then taking the arm of the infant, or person to be vaccinated, draw the skin tense and insert the point of the lancet nearly horizontally into the skin to an extent of about one-tenth of an inch (-); then give the lancet a turn round, withdraw it, and press it down upon the puncture. Five such punctures, to the distance of about half an inch apart, should be made on one arm.

The following figures represent the characters of the vaccine vesicle:—



Supposing that an arm with mature vesicles should not be available, lymph may be procured from any vaccine station. It will be received in that case, preserved either in

tubes, or on small points of ivory. If in tubes, the point at each end of one must be broken off, and the contained lymph be *gently* breathed on to the point of the lancet and inserted as above directed. If the lymph have been preserved dry on "points," one of these should be used for each puncture. Dip the point quickly into cold water, and shake off any excess of water. The object is just sufficiently to moisten the lymph, that it will be easily scraped off on to the point of the lancet, and inserted as before directed.

Some degree of inflammation occasionally occurs on the vaccinated arm. This will generally disappear quickly under the application of simple water-dressing.

A slight eruption of small colourless pimples on various parts of the body also occasionally follows vaccination, and disappears in the course of a few days.

To ensure the success of vaccination, the infant to be vaccinated should be in good health, and free from any eruption of the skin, and the child from whom the lymph is taken should also be in perfectly good health.

With these precautions, there is no ground for the fear that other diseases than cow-pox will be transmitted by the operation. Very great exaggerations and misrepresentations have been put forth on this point in order to excite prejudices against vaccination.

One very common source of prejudice exists in the ordinary fallacious reasoning which puts any two near things together in relation, as cause and effect. For instance, a child at about three months of age having been vaccinated has (we 'll say for argument's sake) a skin disease break out a few weeks after —therefore, says the opponent of vaccination, "this irruption is the consequence of the vaccination."

We put another case. A child that has not been vaccinated arrives at the period of teething, and suffers from some skin disease. This is a very common thing; but clearly it could not have been caused by vaccination.

The explanation of the fallacy is this. Teething often excites a febrile disturbance. A febrile disturbance may excite into activity any latent constitutional tendency to skin, or other disease; vaccination usually closely precedes teething—and so the disturbance due to teething is charged upon the vaccination.

Re-vaccination. — The primary vaccination of infancy, if well and thoroughly performed, as shown by the existence of several well marked cicatrices, affords protection for life from severe small-pox—protection however, not so complete but that modified small-pox shall not occur. It is shown by a vast accumulation of statistics that there is a greater tendency in vaccinated persons to take small-pox between the ages of fifteen and twenty-five than at all other ages put together. It is therefore advisable, in order to obtain complete protection, the operation of vaccination should be performed at puberty, or when growth is completed.

The insertion of lymph by three punctures is sufficient for re-vaccination.

The lymph from a re-vaccinated vesicle should never be used for primary vaccination.

Wounds, Cuts, Stabs. These are of several kinds—*e.g.*, incised, contused, lacerated, punctured—requiring each a modified treatment.

Incised wounds.—These are clean cuts or wounds, with smooth defined edges.

Contused wounds are wounds attended with bruising of the parts, such as seen in gunshot wounds.

Lacerated wounds are pretty much the same as bruised wounds—the edges are rough and jagged.

Punctured wounds are where the orifice of the cut is small but its extent deep, such as in stabs.

Treatment.—Incised wound.—In the case of incised wound or clean cut, if not large in extent, it will heal readily by the edges being brought together by means of some simple unirritating plaster, such as "adhesive plaster," or "isinglass plaster," or goldbeater's skin.

It may be advisable to bring the edges of a wound together with stitches. The most convenient needle for this purpose is a glover's needle, and white silk is the best material for the sewing.

If the wound has been inflicted by broken glass, &c., the surfaces should be carefully searched for any fragments or foreign bodies before the edges are brought together.

If the bleeding be profuse, the wound should be left exposed to the air for a while, or the ordinary means used to stop the bleeding.

If the cut be a long one, there should be small intervals left between the strips of plaster, in order to allow blood or other fluids to escape. This strapping-plaster need not be removed for three or four days, unless there be pain and throbbing in the wound; in this case they should be loosened, or even removed, as these symptoms indicate inflammation. If it be necessary to remove the strapping before union has taken place, the wound should then be dressed with water and lint covered with oil-silk or gutta-percha.

Scalp wounds.—Cuts on the scalp should be carefully cleansed from hair, which should also be removed for about half an inch around the wound. If small the edges can be brought together with plaster. If the wound be large, it is better simply treated with cold water dressing. No stitches should be put in these wounds unless they are very ragged and gaping, as they are *prone* to excite erysipelas in this part of the skin.

Bruised, contused, and lacerated wounds. — In consequence of the tearing or bruising of the edges of a lacerated wound, the vitality of those parts is more or less impaired; hence these wounds do not heal as readily as a clean cut.

In treating a contused wound, the surface should first be carefully sponged clean of clotted blood, or foreign bodies of any kind, such as portions of clothing, small shot, etc.

The simple water dressing, or wet lint, covered with oil-silk, is the most suitable for this kind of injury. If the soft parts be much torn they may be bound down by a roller, and water dressing applied.

After a time, the surface of a wound of this kind becomes sluggish in its healing, and resembles an ulcer. It should then be treated with zinc ointment, or yellow basilicon.

Stabs, or punctured wounds, require special treatment, varying with their depth, and the part in which they occur.

A slight wound of this sort, not penetrating deeply, may be dressed with isinglass plaster, adhesive plaster, or goldbeater's skin.

If, however, deeper, but not entering a cavity, the simple water dressing should be applied, and the part wounded be so placed that blood may escape freely. For this reason it is not advisable to en-

deavour to heal a punctured wound quickly.

If the bleeding from the wound does not stop from the exposure to cold, the wound may be plugged with lint or soft linen, soaked in tincture of perchloride of iron, diluted with an equal quantity of water, or with tincture of matico. The plugging may be allowed to remain in twelve hours. After its removal, if the bleeding be checked, dress as above directed with water.

A deeply punctured wound is prone to heal at the surface; this should be prevented by inserting a strip of lint between the lips of the wound, so as to allow of the escape of matter. The healing from the bottom is sometimes to be promoted by injecting with a weak solution of Condy's fluid (a teaspoonful to a pint of water.

ARTICLES SUITABLE FOR A MEDICINE CHEST.

Acetate of ammonia, or Mindererus spirit.
Acetate of lead.
Adhesive plaster.
Aloes.
Alum.
Bark, compound tincture of.
Basilicon ointment.
Bicarbonate of soda.
Blistering plaster, or liquid.
Borax.
Calomel.
Carbonate of ammonia.
Carded wool.
Carded oakum. "Stypium."
Castor oil.
Catechu, tincture of.
Chalk, prepared.
Cod-liver oil.
Compound colocynth pills.
Compound rhubarb pills.
Creasote.
Diluted sulphuric acid.
Dover's powder.
Epsom salts.
Ether.
Forceps of different sizes.
Glass measures.
Grey powder, or mercury with chalk.
Iodide of potassium.
Iodine, tincture of.
Ipecacuanha powder.
Ipecacuanha wine.
Iron, muriated tincture of.
Jalap.
James's powder.
Laudanum.
Linseed meal.
Lint
Lunar caustic.
Magnesia.
Mortars and pestles.
Nitre, powdered.
Nitre, spirits of.
Oil silk, or gutta percha tissue.
Opodeldoc.
Oxide of zinc.
Paregoric.
Peppermint, essence of.
Quinine.
Rhubarb powder.
Scales and weights.
Scissors.
Senna leaves.
Spatulas.
Tartaric acid.
Tincture of benzoin, or Friar's balsam.
Turpentine, spirits of.
Zinc, sulphate of.
Zinc, oxide of.

POISONING AND ITS TREATMENT.

Symptoms.—These generally are sudden in their occurrence. As in criminal or accidental poisoning the quantity of the poison is usually large, the symptoms are both sudden and severe. In criminal poisoning, however, as is well known from many notorious instances that have been made public, the dose sometimes given is small and continued for a long interval so as to give the symptoms the characters of disease. Villany often succeeds in this attempt, but happily more frequently fails. It is in these cases that the true nature of the symptoms becomes difficult of detection, and calls for the closest vigilance. The circumstances attending the large and clumsy doses of the first mentioned class of cases are for the most part so obvious that a little investigation leads to discovery. Another feature attends these, that is the suddenness and severity of the attack not unfrequently induces a suspicion of poisoning where truly disease alone is the cause of death or illness. Further investigation will generally lead to a correct conclusion. The symptoms of the most common poisons now to be related will be found of assistance in the formation of an opinion in either instance.

Circumstances Modifying Action of Poisons.—There are certain conditions of the body which modify the action of poisons. Sleep or intoxication for example which retards, or debilitated states of the body which accelerate their action. Different diseases also have very different influence over the action of poisons, some accelerating and others retarding them.

Distinctive Symptoms.—Then again, the symptoms of poisoning will generally occur after a meal or medicines have been taken, manifesting themselves within an hour after the poison has been introduced into the system. Strong presumptive evidence of poisoning may also be assumed when a number of people, who have been partaking of the same food, are all seized with similar symptoms. In such a case it is very advisable to cause a strict investigation to be made into the articles of food of which the sufferers have partaken, and not only this, but all the culinary utensils, in which the food has been prepared, should also be examined.

Diseases Resembling Poisoning.—Great caution should, however, be observed before arriving at the conclusion that poisons have been administered, and it should be borne in mind that there are many diseases the symptoms of which offer a close resemblance to those of poisoning; among these are those particularly affecting the nervous system, such as apoplexy, lockjaw, epilepsy, etc. The symptoms of cholera are often very sudden, and have been mistaken for those of poisoning, as have also colic or perforations, resulting from ulceration of either the stomach

or intestines. The diseases of the heart also frequently cause the sudden appearance of alarming symptoms, which, if the existence of disease were not suspected, might easily be mistaken for those of poisoning.

CLASSIFICATION OF POISONS.

The poisons most commonly met with may be divided into three classes—viz., animal, vegetable, and mineral; of these the two latter ar more numerous, or at all events more commonly met with than the former.

ANIMAL POISONS.

In the first class is poisoning from certain shellfish, such as mussels, lobsters, etc., the eating of which is sometimes followed by an eruption of nettle-rash over the whole body, which causes it to have a bloated swollen appearance, and produces difficulty of breathing, accompanied with giddiness, nausea, stomach-ache, and great thirst.

Treatment.—If commenced within two or three hours after the appearance of the symptoms, an emetic of mustard, salt, and warm water, should be given. The emetic should be compounded thus:—

Mustard, 1 teaspoonful.
Common salt, 1 teaspoonful.
Warm water, a tumblerful.

Mix, and take as a draught.

Should, however, a longer time have elapsed, purgatives, such as a tablespoonful of castor oil, or half an ounce of Epsom salts, should be administered and repeated until full action is obtained. Stimulants, such as salvolatile, or aromatic spirits of ammonia, and ether, may also be administered if there be much depression.

The following form would be a useful draught:—Take of

Nitrous spirits of ether, 30 minims.
Spirits of salvolatile, 30 minims.
Water, to make up $1\frac{1}{2}$ ounces.

Repeat the dose every two or three hours until the system rallies.

VEGETABLE POISONS.

Of these the most commonly met with are the aconite or monkshood, belladonna or deadly nightshade; the hellebore, hemlock, henbane, foxglove, laburnum, yew, colchicum or meadow saffron, and mushrooms, all of which are indigenous to this country. Others, such as opium, Indian hemp, nux vomica, and gamboge, are not native here.

Among vegetable poisons should be included oxalic acid, and that most deadly of all poisons, prussic acid, which is found in undiluted "almond flavouring" used for culinary purposes.

Symptoms.—Vegetable poisons have many features in common, thus they are strongly acrid and narcotic, or depressing; causing drowsiness, feebleness of pulse, vomiting, purging, and griping.

Under the following enumeration, the symptoms peculiar to each will be found, together with their appropriate treatment.

In order to assist the reader in the detection of vegetable poisons, we have appended a plate giving representations of some of the poisonous plants most commonly met with in temperate climates, and which are most likely to be mistaken

1. *Green Hellebore.* Helleborus viridis

2. *Monk's Hood.* Aconitum Napellus

3. *Yew.* Taxus baccata

4. *Deadly Nightshade.* Atropa Belladonna

for harmless plants by children and others.

Aconite (*Monkshood*). (*See* Plate.) *Symptoms.*—A sensation of burning, tingling, or numbness, in the mouth and throat. Giddiness, loss of power to stand firmly, pain in the region of the stomach, frothing at the mouth, vomiting and purging. The pupils are dilated, the skin cold and livid, the breathing becomes difficult. In some cases delirium and paralysis follow.

Treatment.—An emetic should immediately be given, such as a mixture of mustard, salt, and warm water, thus :—

Mustard, 1 teaspoonful.
Common salt, 1 teaspoonful.
Warm water, a tumblerful.

Or,

Sulphate of zinc, 20 grains.
Water, 1 ounce.

Given every half hour until the stomach has been emptied of the poison. Acidulous fluids, such as vinegar and water, and cordials should be given freely. External warmth should be kept up by mustard plasters, hot water bottles to the feet, and friction of the surface.

Distinction.—The root of this plant is often mistaken for horse-radish which it closely resembles; therefore great care should be taken not to allow the two plants to grow in the same garden. The leaves and seeds of the plant are also poisonous.

Belladonna (*Deadly Night-shade*). (*See* Plate.) The leaves, berries, stalks—or extract or tincture made from these—are most commonly met with as causes of poison.

Symptoms.—Heat and dryness of mouth, a feeling of tightness in the throat. Nausea, vomiting, giddiness, indistinct or double sight, intense excitement, delirium of a peculiar kind, the patient twists himself round and round, butts against the wall with his head, and performs various other antics. These are followed by heaviness and lethargy.

Treatment. — Begin by giving freely a mixture of about one part of vinegar to two of water. Then cause evacuation of the stomach by means of emetics, such as :—

Mustard, 1 teaspoonful.
Common salt, 1 ditto.
Warm water, a tumblerful.

Taken at a draught.

Or,

Sulphate of zinc, 20 grains.
Water, 1 ounce.

Dissolved, and taken as a draught. Promote vomiting by warm water slightly acidulated with vinegar.

The bowels should be emptied by injections of castor oil.

Digitalis purpurea (*Fox-glove*). (*See* Plate.) *Symptoms.*—Vomiting and purging, accompanied with severe pain in the stomach. This is followed by a state of lethargy, during which the patient will sleep for hours; this, again, is followed by convulsions. The pupils are dilated and insensible to the stimulating effect of light, the pulse becomes small and irregular; and should the dose have been large, and the proper measures not adopted, coma or insensibility of a severe kind will rapidly set in, and be followed by death.

Treatment. A free use of emetics (*see* under Hemlock) should be pursued. Drinks containing tannic acid, such as strong tea and infusion of gall-nuts, should be given, if the prostration be great brandy should also be given freely.

All the parts of this plant are poisonous; they owe their poisonous properties to an active principle called *digitalin.* This, in combination with tannic acid, is rendered innocuous; hence the reason for its administration in cases of poisoning.

Gamboge (*Cambogia*). *Symptoms.*—Violent vomiting, severe pain in the stomach and excessive purging, followed by great prostration of strength.

Treatment.—Carbonate of potash should be given as follows :—

Carbonate of potash, 20 grains.
Mucilage, or solution of gum, ½ oz.
Water to make up 1 ounce.

Mix, and take every hour until the purging has stopped. When this is the case, and the poison is supposed to be evacuated, give the following every half hour :—

Tincture of opium, 10 drops.
Water, 1 ounce. Mix.

Gamboge is a gum resin obtained from the Garcinia Morella, a native of Spain. It is but little used in legitimate medicine, on account of its violent and uncertain action. Quack pills contain it in very variable quantities.

Hellebores, the.—The Green Hellebore (*Helleborus viridis*).

The White Hellebore (*Veratrum album*).

The Black Hellebore, or Christmas rose (*Helleborus niger*).

The Fœtid Hellebore (*Helleborus fœtida*).

All of these are powerful poisons, the white hellebore especially so.

Symptoms. — Vomiting, purging, giddiness, dilatation of the pupils, convulsions, insensibility, great heat of the throat, and tightness, with severe pain in the stomach.

Treatment.—Vomiting should be excited by large doses of solution of gum and other mucilaginous fluids (such as milk, white of egg, etc.), and injections of the same materials should be thrown up into the bowel.

Coffee should then be given freely, and acidulous fluids and camphor-water.

The roots and leaves of this plant are both poisonous, the roots especially.

Hemlock (*Conium Maculatum*). (*See* Plate.) *Symptoms.*—This plant attacks the muscular power, and causes paralysis of the limbs, sickness, pain in the head, drowsiness, and sometimes it so affects the muscles of respiration as to cause death.

Treatment.—The stomach should be evacuated by some powerful emetic, such as the following :—

Sulphate of zinc, 20 grains.
Dissolved in water, a wineglassful.
Or,
Mustard, 1 teaspoonful.
Common salt, 1 teaspoonful.
Warm water, a tumblerful.

After this, cold water should be applied to the head. Vinegar and water (*see* under Deadly Nightshade) should be administered.

The poisonous properties of this plant reside in the leaves, which somewhat resemble parsley, for which they have occasionally been mistaken. The seeds and the root are also poisonous.

Henbane (*Hyoscyamus*). (*See* Plate.) *Symptoms.*—Vomiting, double vision, dilatation of the pupils, sleepiness, loss of muscular power, a peculiarly tremulous motion of the limbs, flushing of the countenance, heat and weight of head, giddiness, fulness of the pulse, and general excitement.

If the dose has been a large one, the symptoms will be aggravated, there will be loss of speech, delirium, coma, coldness of the surface, and jerkings of the muscles.

Treatment.—As soon as possible, empty the stomach by emetics, and give acidulous drinks ; if, however, the poison has entered the system, purgatives must be given.

The seeds are the most poisonous, the leaves next, and the roots last.

Indian Hemp (*Cannabis Indica*). *Haschisch. Symptoms.*—Much the same as those of opium, but are of a much more pleasant nature to

1. *Cuckoo Pint.*
Arum Maculatum.

2. *Henbane.*
Hyoscyamus niger.

3. *Meadow Saffron.*
Colchicum autumnale.

4. *Woody Nightshade.*
Solanum Dulcamara.

the patient, being associated with delightful dreams and visions.

Treatment.—Much the same as in the case of poisoning by opium.

Cases of poisoning by this plant are very rarely met with in England. In hot climates, however, it is frequently met with, especially in India.

Laburnum (*Cytisus Laburnum*). *Symptoms.* — Pain in the stomach, followed by vomiting and severe convulsions if the dose has been a large one. There is also shivering, great feebleness, and severe purging.

Treatment.—The vomiting should be encouraged by mucilage, milk, white of egg, flour and water.

Should the feebleness be very great, cordials and brandy should be given in repeated small doses.

The bark and seeds of this plant are poisonous, and owe their deleterious properties to an active principle called *Cytisine.*

Meadow Saffron (*Colchicum autumnale*). *Symptoms.* — A burning pain in the gullet and stomach, violent vomiting, and sometimes bilious purging.

Treatment. — Give some mild emetic, thus :—

Ipecacuanha wine, ½ ounce.
Honey, 1 tablespoonful.
Milk, a teacupful.

Stir up and mix thoroughly, and let the patient take it at a draught. This should be repeated every quarter of an hour till vomiting sets in. Of course the dose of ipecacuanha wine should be smaller for children, one-half or one-fourth of the above quantity being ample for a child under five years old.

Then give opium as follows (to adults only) :—

Powdered opium, 3 grains.
Confection of dog rose, sufficient to make a small mass with the opium.

Divide this into six pills, and let the patient have one every four hours, until the symptoms of poisoning abate.

Or,

Tincture of opium, 1 fluid drachm.
Water, to 6 fluid ounces. Mix.

Two tablespoonfuls to be taken every two hours.

Mushrooms (*Fungi*). *Symptoms.*—Pain in the stomach accompanied with vomiting, giddiness, drowsiness, dimness of sight, and debility. The patient appears to be intoxicated.

Treatment.—This cannot better be expressed than in the terse and plain terms of Professor Taylor. They are : "The free use of emetics and castor oil."

Nux Vomica (*Strychnine*). *Symptoms.*—An intensely bitter taste in the mouth. Tipsy manner, sickness, headache, jerking of the arms and legs, and twitching of the body. Lockjaw, great difficulty in breathing, with intense pain in the chest, and a sense of suffocation.

Treatment. — Evacuate the stomach and bowels. Give vinegar (*See* Deadly Nightshade) and other acidulous drinks. If the spasms be very severe and constant, and do not yield to the emetics, etc., then try injections of infusions of tobacco, as follows :—

Tobacco (shag), 30 grains.
Water, 8 fluid ounces.

Mix, and allow to stand for half an hour, occasionally shaking. Then strain, and inject into the bowel in the interval of the spasms.

Strychnia is one of the most deadly poisons, a very small quantity being capable of killing a strong man.

Opium : *an extract from the poppy.* (*Papaver Somnifera.*) *Symptoms.* — Drowsiness, stupor, delirium, pallid countenance, contracted pupil, sighing, loud or snoring respiration, cold sweats, coma, and death.

Treatment.—Emetics of the sulphate of zinc—(*see* under Hemlock)—or if the patient be too far gone to take these, the stomach-pump should be applied (*See* page 663). The patient should on no account be allowed to sleep, but his attention should be constantly aroused. A good plan is to walk the patient rapidly and incessantly about. A tepid bath is useful for arousing the sleepy energies, and cold water should be dashed over the head at the same time. Opium is the juice of the poppy, which runs from incision made in the unripe fruit. Its principal properties are due to an active principle contained in it, which is called morphia. In cases of overdoses of this drug, the same treatment should be adopted.

Oxalic Acid. *Symptoms.* — If the dose be a large one, while it is being swallowed a hot burning acid taste is experienced, extending downwards to the stomach, vomiting then occurs, or within a few minutes.

There is a severe feeling of tightness in the throat, and sometimes delirium.

When the dose is smaller the pain is less, and vomiting does not set in so soon. At times there is no vomiting, at others it alone causes death by causing exhaustion.

Treatment. — Some chalk and water should be immediately administered, and a quantity of water drunk to encourage vomiting.

This is not often administered with a criminal intent, the taste is too strong; but it is taken sometimes in mistake for Epsom salts, which it somewhat resembles.

Prussic Acid (*Hydrocyanic Acid*). *Symptoms.* — Pallid appearance, giddiness, great nervous prostration, loss of sight more or less complete, faintness, laboured and hard respiration, loss of power of motion.

Treatment. — The stomach-pump should be applied; or if this is not handy, emetics, such as mustard, salt and water. (*See* under Hemlock.) Dash cold water over the head and chest. Give salvolatile as follows:—

Spirits of salvolatile, 1 drachm.
Water to 1 ounce. Mix.

Every quarter of an hour until there are some signs of revival.

Prussic acid is the most powerful poison known. This poison is often met with in the essential oil of almonds, and great care should therefore be taken in the use of this pleasant flavouring.

Yew (*Taxus baccata*). (*See* Plate.) *Symptoms.*—Professor Taylor gives the symptoms of poisoning by this plant as follows:—"Convulsions, insensibility, coma, dilated pupils, pale countenance, small pulse, and cold extremities are the most prominent; vomiting and purging are also observed among the symptoms."

Treatment.—As in many other vegetable, indeed it might safely be said in all poisons, vomiting should be excited, and this is best done, and perhaps in the quickest, safest manner by an emetic of mustard, salt, and water. Should the convulsions be very acute, and there be great heat of head, cold should be applied. If the pulse is very small, and the prostration of the patient is great, as soon as the stomach is thoroughly emptied, brandy should be given.

It is commonly supposed that the leaves of this plant are not poisonous when fresh, but this is erroneous. They are at all times poisonous. The berries also are very dangerous, more especially to children, as they have an agreeable taste, and look tempting. The danger of the leaves is not so much for the human race as it is for cattle, who are fond of eating them.

MINERAL POISONS.

The mineral poisons are perhaps those most commonly used for criminal or suicidal purposes, and they are certainly more easily detected by chemical means than are either the vegetable or animal poisons. Science has as yet found out but few certain tests for the vegetable poisons compared with the large number of accurate and easily available tests for the mineral poisons.

Perhaps the most important of this class of poisons is arsenic, as it is certainly the most fatal; others, such as antimony, copper, lead, mercury, and the acids, are in many cases very fatal, but few of these possess the power of destroying life to anything like the extent that is possessed by arsenic.

Acid, Carbolic. The powerful odour of this acid prevents its being frequently taken accidentally, but it has been taken with suicidal intent.

Symptoms.—These are much the same as the other powerful irritant poisons. There is an intense burning pain in the mouth and gullet, accompanied with a feeling of tightness in the throat, vomiting of shreds of mucus, griping pain in the stomach, the lips and insides of the cheeks present a charred appearance, and if its action be not checked, the nervous system suffers and the organs of the senses are impaired, and death rapidly follows.

Treatment. — Albuminous fluids should be given in large doses, such as white of egg, flour and water, gruel, and milk. Magnesia, and chalk and water, is useful in these cases. Emetics of mustard should also be freely administered.

Acid, Hydrochloric (*Muriatic Acid. Spirits of Salt*).—Both the symptoms and treatment of a case of poisoning by this acid are given under Sulphuric Acid.

Acid, Nitric (*Aqua Fortis*). *Symptoms.*—(*See* Sulphuric Acid.) The only difference is that nitric acid does not cause such a dark discoloration of the lips and mouth.

Treatment.—Precisely similar as under case of sulphuric acid.

Acid, Sulphuric (*Oil of Vitriol*).—This acts as a poison by its powerful corrosive powers. It seldom causes death by its absorption into the system, but rather by the excessive irritation and inflammation which it causes to the lining of the mouth, the gullet, and the stomach. It immediately causes the skin to have a charred appearance of a whitish hue, which gradually becomes darker and browner; it causes pain in the stomach, vomiting and eructations of a gaseous character: great nervous depression, which is also shared by the pulse; convulsions, and death.

Treatment.—Give magnesia and water, or lime-water; or, should neither of these be at hand, give soap and water freely.

Antimony (*Tartar Emetic. Butter of Antimony*). *Symptoms.*—These are very much the same as those of arsenic, with the exception that the depression, vomiting, and collapse are much more rapid, owing to the immediate action of the poison on the heart.

Treatment.—Should the vomiting not occur freely, it will be as well to give an emetic, and afterwards a dose of tannic acid and water, thus:—

Tannic acid, 10 grains.
Water, 1 oz. Mix.

Or,

A dose of very strong tea, or infusion of gall-nuts mixed with magnesia.

Arsenic (*Realgar or Red Arsenic, White Arsenic, Scheele's Green, Orpiment, or Yellow Arsenic*). *Symptoms.*—An unpleasantly strong metallic taste, a tightness in the throat, vomiting of a brown mucous character mixed with blood, fainting, great thirst, excessive pain in the stomach with shivering, purging, the stools being very offensive and of a dark character, pulse small and rapid, great nervous prostration, and delirium.

Arsenic is sometimes administered in repeated small doses, and by this means is produced a state which is called "*chronic arsenical poisoning*." In this case, disorder of the stomach and bowels exists, but does not form such a prominent symptom as in the more acute form of this poisoning.

There will be redness and smarting in the eyes, great sensibility of the skin, at times accompanied either by a rash, which consists of minute vesicles or blisters, or else by nettle-rash. There is also local paralysis—that is to say, paralysis of one particular set of muscles, accompanied, or rather preceded by numbness and tingling in the fingers and toes. The patient loses flesh and becomes exhausted, sometimes the skin peels off, and loss of hair occurs.

Treatment.—A substance termed hydrated peroxide of iron has been strongly vaunted as an antidote to arsenic.

The best way to give it is to mix a tablespoonful with water, and give every five or ten minutes. Should this not be procurable, it is best to use the stomach-pump or emetics. (*See* under Hemlock.)

Large quantities of mucilage should be given to drink, or eggs or milk.

When the worst symptoms have subsided, and the patient is out of immediate danger, he should be kept in bed, with warm poultices applied to the pit of the stomach. Small pills of one grain of opium should be given every four hours while pain continues, but no violent aperient.

Arsenic is one of those poisons which begun with very small doses, and gradually increasing them may become almost harmless.

One form of arsenic ("Scheele's green") is largely used as a colouring for room papers. In this form it often does insidious mischief, as it separates from the paper in minute particles, and circulates freely in the air of the room as dust. This fact may be proved by submitting some of the dust which collects on bookshelves, etc., in a room thus ornamented to a few simple chemical tests, or by causing some expert to analyse it. By so doing the inquirer will often receive satisfactory evidence of the existence of this poison if he has not previously had some practical experience of its effects.

Copper (*Blue Vitriol. Mineral Green. Verdigris*). *Symptoms.*—These, again, are much the same as in arsenic, but rather less acute. It may here be stated that many alleged cases of poison by verdigris, from cooking vessels, etc., are in reality owing to bad or decomposed food.

A poisonous dose of salts of copper is always followed (if the patient recovers from the first effects) by inflammation of the bowels.

Treatment.—Begin with the stomach-pump, or an emetic. When the stomach has been evacuated, give white of egg, flour and water, milk. The subsequent inflammation of the bowels should be treated as described under arsenic.

Lead (*White Lead. Sugar of*

1. Common Hemlock.
Conium maculatum

2. Common Mezereon.
Daphne Mezereum

3. Foxglove.
Digitalis purpurea

4. White Poppy.
Papaver somniferum

Lead). *Symptoms.*—This also causes many of the symptoms described under arsenic, when taken in a large quantity; but there is a particular form of disease called lead colic, which particularly affects workers in lead (*see* Colic); these people are also subject to a form of paralysis (*see* Paralysis).

Treatment. — When taken in a large dose, give an emetic of sulphate of zinc or copper (*see* Hemlock). If the pain in the stomach be severe, small doses of tincture of opium, about 10 minims, should be given at short intervals, combined with sulphate of magnesia.

Mercury (*Corrosive Sublimate. Calomel. White Precipitate*). *Symptoms.*—Intense metallic taste in the mouth, pain in the stomach, purging, vomiting, etc., in fact, the symptoms of nearly all metallic poisons are similar. There are, of course, certain peculiarities belonging to each, and that belonging to mercury is the largely increased flow of saliva, commonly called "salivation," which almost invariably follows a poisonous dose of mercury in any of its forms. The period which elapses between the taking of the poison and appearance of the salivation, varies from a few hours to some days.

Treatment. — An emetic of sulphate of zinc or copper (as under Hemlock) should be given in white of egg, mixed with milk or water, milk, and flour and water in large draughts. When the salivation sets in, the following will be found useful when in conjunction with astringent gargles :—

Iodide of potassium, 24 grains.
Tincture of bark, 1 ounce.
Water, to 8 ounces.

Mix, and take two tablespoonfuls three times a day.

A good form of an astringent gargle is as follows :—

Alum, 30 grains.
Water, to 4 ounces. Mix, and use about a tablespoonful as a gargle every three or four hours.

ALKALIES.

Ammonia. *Symptoms.*—Pungent acrid odour, hot taste, stomach-ache, followed by convulsions, delirium, and death.

Treatment.—Vinegar and water in large doses, lemon juice and olive oil.

For any of the other alkalies, soda or potash, in their caustic forms, the same treatment should be pursued.

Chloride of Zinc (*Sir W. Burnett's Disinfecting Fluid*).—*Symptoms.*—Pain of a burning kind in the throat, nausea and vomiting, griping pains in the stomach, pallor and coldness, the legs are drawn up, and there are appearances of collapse.

The strong or concentrated preparation acts with extreme corrosive violence on the mouth, gullet, and stomach. Should the action of this poison be further continued, it will be found that it affects the nervous system. This will be demonstrated by the patient's sight becoming dim, and the power of taste and smell less acute than it is normally—by extreme depression, syncope, and death.

Treatment.—Milk and white of egg should be given freely, and emetics of mustard and warm water, combined with flour or oatmeal.

ON THE MANAGEMENT OF THE SICK-ROOM, NURSING, DIET, &c.

CHAPTER I.

THE MANAGEMENT OF THE SICK-ROOM.

THE arrangements of the sick-room require attention, and demand special notice. They influence very much the result, and may indeed, where faulty, baffle the efforts of medicine. We would lay down the following brief rules :—

1. *Fresh Air.*—Secure a free and full change of air without chilling the patient. According to the state of the weather have the door or window or both open. In the summer time the upper part of the window of a sick-room should always be opened ; in cold weather a fire burning acts as a suction-pump to draw off the vitiated air of the room, at the same time that it diffuses sufficient warmth. To secure purity of air, as well as the quiet so necessary for a sick-room, no more persons than are required should be in the room. A crowd of people leads to gossiping and often exciting talk.

2. The temperature of a sick-room should, if possible, be maintained as near to 60° as possible. In the winter season, unless great care be taken, it will easily fall below this. At other times of the year it is more readily overheated.

In some affections of the respiratory organs there is great advantage in cold weather in keeping the air of the room warm and moist by the steam from the spout of a kettle. If a piece of tin or lead pipe be attached to the spout, the steam can be brought further into the room. This plan has the additional advantage of securing a tolerably equable temperature in the room—an important point in the treatment of croup and other inflammatory affections of the chest.

3. *Light.*—The light should be so adjusted as to be moderated according to the sensibility of the patient. Some persons when ill like a dark room. This is more particularly the case when the head is at all affected. In delirium a darkened chamber has often a very soothing effect.

The bed should not be so placed that the strong direct light falls upon the face of the patient.

During convalescence, the bright and cheerful light of the sun exerts a beneficial restorative influence.

4. *Cleanliness.*—A well-known proverb expresses the importance of cleanliness; and if the proverb apply anywhere, it applies still more forcibly in the sick-room.

A common error is that in eruptive fevers the clothes should not be changed for fear of exposure of the surface of the body to a chill. Nothing can be more mistaken; the body-linen should not only be changed daily, but the bed-linen would also be changed with advantage at least every two or three days, and removed from the room as quickly as possible. The body should also be washed daily. Children suffering from scarlet fever, measles, or typhoid, derive comfort and benefit from their bodies being sponged all over daily with warm vinegar and water.

The washing of utensils, and cleansing operations generally, should be carried on as much as possible out of the sick-room, in order to avoid the noise and bustle consequent thereon.

All unnecessary articles of furniture are better out of the room.

Lotions, Fomentations, etc.—External applications of various kinds are of so much use in the treatment of disease that a few directions as to their mode of use cannot be misplaced.

Lotions.—These may be applied simply by frequently washing the surface with them. In scarlet fever the sponging with warm vinegar and water allays the irritation and heat of surface, and promotes the healthy functions of the skin. A more efficient method for an evaporating lotion is to soak one or two layers of soft linen or lint with the lotion, and laying them on the surface wet them again when they become dry. The drying takes place through the heat of the surface—the more rapidly, the higher the temperature of the part. *An evaporating* lotion is readily made by a wineglassful of gin or whisky in a pint of cold water.

Sedative Lotions.—When the lotion is intended to act more by its sedative than by its evaporating effects, it will suffice to lay lint or linen soaked in it upon the surface, and cover it with oil silk or gutta-percha tissue. Spongio-piline is a convenient medium for the application of sedative or other than evaporative lotions. Care, however, must be taken that it is not put on too wet, or the lotion will drain out and wet the clothing or bedding.

A sedative lotion is made by boiling half a pound of fresh hemlock-leaves or half a dozen poppy-heads in three pints of water down to a pint and a half.

Ice.—A greater degree of cold is sometimes required to be applied to a small part of the surface, as in the case of a rupture or in fever when the headache and heat of the head are extreme.

A convenient mode of reducing the temperature of a part by ice is to pound some small and enclose it in a bladder, taking care first to squeeze out the superabundant air, and then to tie the neck of the bladder very tightly. The water in the bladder will continue at the temperature of the ice until every particle of it is melted.

Fomentations are of very great value in the relief of pain of internal organs and of large joints when inflamed. They are a part of the nurse's duties which require promptitude and judgment. If a large joint—a knee, for instance—be inflamed, much benefit is derived from swathing the joint in flannels wrung out of hot water, and wrapping these again in dry outer flannels. Fomentations likewise are of great use in inflamma-

tion of the chest or of the bowels. The hot wet flannels should be put on quickly, and changed quickly, about every five minutes, so as to avoid exposure to the cold air. They may be continued half an hour or more if they do not fatigue the patient.

Turpentine Stupes are hot fomentations, with spirits of turpentine sprinkled on the flannels. These cannot be applied so long as half an hour—the heat and pungency of the application is too much to be tolerated beyond fifteen or twenty minutes. They may be repeated twice a day.

Wet Sheet.—In fevers with great heat of skin, wrapping the whole body in a wet sheet, and then enclosing in a blanket for an hour or more, will sometimes cause the skin to break into a profuse perspiration, reduce the heat of the skin, and moderate the pulse. In some affections of the kidney, attended with dryness of the skin and absence of perspiration, the wet sheet has been known to restore the action of the skin and relieve the kidneys. The wet sheet is, however, so much a part of the hydropathic treatment of disease that it can scarcely be safely or properly used apart from the medical supervision with all the means and appliances of a hydropathic establishment.

Poulticing.—So common a thing as a poultice might seem beneath notice in such a treatise as the present, but some hints may be given thereon to the nurse.

Thus in making a linseed-meal poultice most persons pour hot water upon the meal. To make a smooth, firm poultice, however, the reverse should be the plan—viz., to stir the meal into the water.

A poultice should not be too heavy, especially if to be applied on the abdomen. It need not be changed oftener than when it gets cold.

There are various kinds of poultices—*e.g.*, mustard, yeast, carrot, bran, charcoal, bread.

Bread Poultice may be used alone, for most small purposes, such as a boil. It will be the basis also of the charcoal and carrot poultices.

Charcoal, bruised or powdered coarsely, and mixed with bread poultice, is useful for absorbing offensive odours.

Scraped Carrot, mixed with bread-poultice, is used to stimulate a sluggish and sloughing or mortifying surface.

Yeast, mixed with bread-crumb, forms also a good poultice for sluggish and offensive ulcers.

Mustard Poultice, or Sinapism, may be made several ways; sometimes equal parts of bread-crumb or flour, and mustard are used, but the best way is to make a tolerably thick paste of mustard and water, spread it on stiff brown paper, and cover with thin muslin. This poultice is stronger, but requires to be kept on the part a less time than the others. When removed, the surface is easily cleansed by a soft towel.

A handy way of making a mustard plaster also is to soak a slice of bread in water, and sprinkle it with flour of mustard. A ready and efficient sinapism is afforded by Rigollot's "mustard leaves."

Blistering Plaster and Liquid.—Blistering a surface with cantharides may be effected in two ways; one, by the application of the ordinary blister plaster, the other by painting with blistering liquid.

When the plaster is used it is usual to leave it on the skin of an adult for eight or ten hours; when, if it has raised a blister, this is to be cut,

and the fluid having run out, the surface is then to be covered with a piece of fine dry wadding or carded wool. This dressing being left on for two or three days, the skin will be found healed underneath. This plan is simpler and less painful than dressing with lard or spermaceti ointment.

If desirable to "keep the blister open"—*i.e.*, its surface discharging—it may be dressed with savine ointment spread on lint or linen.

In the cases of young children the blister plaster should not be allowed to remain longer than two hours, after which period a muslin bagful of warm bread-and-water poultice should be laid on, and the blister will form under that. After the blister has been cut, the surface can either be dressed with continuation of the poultice or with dry wool.

A warm poultice is a most suitable dressing for blisters, when applied for quinsy or other sore throat.

Blistering Liquid.—As this is intended to be swift in its action it should be of the strongest kind that can be purchased. After it has been painted on for a few minutes the skin will be seen to turn white; that is a sign that enough has been painted on. In the course of half an hour blisters will begin to form. These can be dressed as above directed.

This mode of raising a blister has many advantages over the plastering. It is speedy in its operation, it is cleaner, and it is more manageable for children and persons in a state of delirium.

For cases of apoplexy or paralysis, where a speedy impression upon the nervous centres is desirable, the blistering liquid possesses great advantage, as it does also in acute rheumatism, in which affection the pain is often quickly relieved by having a strip of the liquid painted round the limb near to the swollen joint.

Counter-Irritation acts by derivation or diversion of a morbid action from one part by setting up another equally or more powerful influence on the nerves of another part. It places in our hands a very powerful means of acting upon diseases of internal organs that are not absolutely close to the part acted upon, as well as when applied near to the seat of the malady. An example of the latter is afforded by the influence of belladonna or aconite on rheumatic or neuralgic pains; of the former, in the beneficial effects produced on the brain by a blister plaster applied to the nape of the neck.

Counter-Irritants and External Stimulants.—The following are the chief agents of this class mentioned in this essay :—

Blistering plaster.
Tincture, liniment, and ointment of iodine.
Compound camphor liniment and turpentine liniment.
Soap liniment (opodeldoc).
Nitrate of silver.
Basilicon ointment.
Citrine ointment.
Belladonna liniment.

Nitrate of Silver (*Lunar Caustic*).—Much misapprehension prevails as to the properties of "lunar caustic." It is very commonly said to be used for "burning" the throat, "burning" off a wart, etc. The fact is, that the word "caustic" is here a misnomer. Nitrate of silver does not burn or destroy after the manner of a caustic such as pure

potash or quicklime. Applied lightly to the skin, it acts on the surface as an astringent or sedative; entering into chemical combination with the outer skin it forms a hard and horny layer, which compresses the part beneath it. In this way it acts as an astringent, and allays excitement of the minute nerves of the skin, and in this way is useful in sore throats. If, however, it be applied in a strong or saturated solution, or rubbed on firmly to a moistened surface of skin, it will raise a blister.

It is by its astringent and sedative action that it becomes so valuable a remedy in inflammation of the eyes, in erysipelas and other inflammations of the skin and mucous membranes.

Tincture of Iodine.—Iodine may be applied externally in the form of tincture or of ointment.

Its action in the form of a tincture depends upon the strength of the solution.

As a tincture of ordinary strength, it promotes absorption by the moderate degree of stimulation that it possesses. In a stronger form its stimulant action will induce blistering, whereas the weaker solution produces only a peeling off of the skin. The principal uses of tincture of iodine are in chronic inflammation, chronic rheumatism, thickening of bone, enlarged tonsils, chilblains. Its use may be suspended for a day or two if the skin be cracked.

Iodine Ointment.—When rubbed in as an ointment, iodine alone, or as iodide of potash ointment, has considerable power in procuring the decrease of glandular swellings, as in strumous cases, and in goitre.

Stimulant Liniments, Camphor, etc.—These forms of stimulating the surface are of great service in chronic rheumatism and in local pains of various kinds.

The compound camphor liniment, or the turpentine liniment, is either of them a strong stimulant.

Opodeldoc is less powerful, and is well suited for use with *sedatives*, such as laudanum, or belladonna liniment, in neuralgic or rheumatic pains.

Belladonna Liniment is a powerful poison, and requires therefore that it should be cautiously used, being rubbed on gently with the palm of the hand. It is a means of relieving pain when rubbed on the joints in acute rheumatism, but caution must be observed not to apply it upon a raw or blistered surface, as it is readily absorbed under those circumstances.

In neuralgic pains, a piece of lint soaked in belladonna liniment and laid on to the skin will often give relief.

Leeching.—When leeches have to be applied, the part should first be carefully cleansed and washed over with milk-and-water before they are applied. If the leeches are then held in a wineglass or box over the part to which they are to be applied, they will readily bite, as they will be confined to a limited space.

For the stanching of leech-bites *see* Surgical Hæmorrhage.

Care should be taken in applying leeches that they be applied over a surface that has bone beneath, so that pressure can be borne in endeavouring to stanch the bleeding.

The bleeding from leech-bites should, as a rule, be checked or stopped as soon as they leave their hold. This is particularly to be

observed with children, as they are prone to bleed a good deal; indeed, so obstinate and difficult to stop are children's leech-bites, that we should seldom advise their use.

The Nurse.—It is not always possible to meet with a well-trained nurse, even in a large town, while for those who are likely to consult the pages of this book it may be an impossibility to meet with a professed nurse of any kind. The hints here given are therefore addressed to those who may be compelled to be both nurse and doctor, and who in either capacity may be beyond the reach of professional or other aid.

Cheerfulness and forgetfulness of self are prime requisites in the character of the woman who undertakes the duties of a nurse. Illness makes people selfish, therefore it is the more necessary that there should be unselfishness to cope with this weakness.

A nurse should secure quietness in the sick-room, and should permit only cheerful conversation—if possible, not too much of that. In acute affections of the brain this is a point of the highest importance. In hæmoptysis, or "spitting of blood," strict silence must be enjoined upon the patient, who should make use of a pencil for questions or answers.

The nurse should carefully avoid the narration of doleful tales of fearful cases she has seen or heard of, as these depress the patient and interfere with recovery.

Directions for the management of the patient, given by those who are responsible for the well-doing of each case, should be strictly attended to by the nurse.

In all severe cases of illness, such as fevers, inflammations, accidents, etc., a written memorandum should be kept of each time of taking food, wine, medicine, etc., with their precise quantities. Without a check of this kind it is very easy to give too much or too little, or to transgress directions as to time.

It need hardly be remarked that sobriety is absolutely indispensable in a nurse. This requisite is at once admitted; but many persons do, through false kindness, their very best to banish temperance from the sick-room. They will leave wine and spirit bottles open in the room, and expect that they shall not be touched. Until nurses in general shall have earned a much higher character than is at present the case, it is safer not to put temptation in the way.

Caution in Use of Stimulants.—Another point in reference to this same subject may be mentioned. When stimulants are advisable for illness, great care must be taken not only that they are judiciously administered as to present quantity, but that they are discontinued with regard to future consequences, when no longer wanted for immediate requirements.

CHAPTER II.

BATHS AND BATHING.

In infancy, bathing or washing at least twice a day is necessary to preserve the skin in a healthy condition. In so doing, however, care must be taken that the surface of the body be not chilled ; a judicious warmth (avoiding too great heat) should be studied. In the early weeks of life the body does not readily maintain its own temperature—hence the reason that the young of animals remain a certain time constantly near their mother. It is the same with our infants ; no warmth is so equable or so good for them during the few first days or weeks of life as the warmth of their mother, hence also the necessity for a warm bath as the means of cleanliness.

A fallacy lurks in the notion of hardening children. The argument in favour of the attempt so to do, drawn from the "state of nature," is altogether a dangerous fallacy. All that can really be said in its favour is, that it is not possible to kill all the children submitted to the system. The delicate ones will be sifted out, and the hardy ones will survive in spite of "system." It is an error in reasoning to quote the savage state as that of nature, and therefore worthy of imitation. It may be urged with greater force that the nature of man's mental endowments tends to raise him from the savage to the civilized state. The natural state of man is that of civilization, with its attendant fostering care of infantile existence.

Sponge Bath.—In after-life the daily sponge bath contributes greatly to the preservation of health, by the promotion of cleanliness and by the exhilarating influence in stimulating the circulation of the blood on the surface of the body. The warmth of reaction is more sure to follow if the bath be used on rising, while the body is still warm, and before the surface is chilled by exposure in dressing. In using this, a due regard to the feelings should be observed. Some persons are extremely sensitive to cold, while others enjoy its reaction and bracing influence. The temperature of the water should, therefore, be regulated by the climate, weather, and individual susceptibility.

After sponging, the whole body should be briskly dried with a rough towel, and a glow of warmth will follow.

Cold Bath. (Temperature 50° to 60°.) — A cold bath will vary in its effects according as it is taken in a small bath, or in a river, the sea, or a quantity of water large enough for swimming, and according to the temperature of the air. The benefit to be derived from a cold bath is governed also pretty much by the state of health of the bather, or on the greater or less vigour of the heart's action, and of the circulation in the skin. A cold bath should not be taken with a cold skin ; the best preparation is the warm glow of exercise. A plunge (head first) into cold water, even when hot and perspiring after exercise, and a good swim for a few minutes, is more surely followed by healthful reaction than the waiting until the body is dry and cool, or perhaps chilled by evaporation of perspiration. A cold bath without the active exercise of swimming should

not be prolonged beyond three or four minutes; even the good swimmer must be warned that prolonged action of cold incurs the risk of cramp.

Persons in impaired state of health should take little more than a single immersion, and this should be followed by friction of the surface with towels or dry flannels. Such persons should avoid bathing on an empty stomach; it is better not to take a cold bath immediately after a meal.

The answer to questions on the advisability of cold bathing, whether in the sea or otherwise, is to be found in the state of the pulse and of the skin. With a feeble pulse and a disposition to palpitation of the heart, the flow of blood through the skin is sure to be tardy, as compared with that of health, and reaction will consequently be slowly established at the risk of congestion of internal organs. Hence, in persons disposed towards head, or heart, or lung affections, great caution should be exercised. Persons who are subject to palpitation of the heart, giddiness, etc., had better avoid the cold bath.

Generally, it may be laid down as a rule that if cold bathing be not followed by a glow of warmth on the skin, it should not be repeated.

About two or three hours after a meal is the best time for cold bathing.

The Tepid Bath (temperature 70° to 80°) is suitable for those whose health, or sensitiveness to cold, forbids the use of the cold bath. The same rules, however, apply, especially as regards the delicate in health.

The Hot Bath (temperature 98° to 110°) differs from the cold or tepid bath, inasmuch as they are preservative of health, while this is curative of disease.

It opens the pores of the skin, relaxes the muscles, soothes the nervous system, and (after its first stimulation of the heart's action is past) is a valuable agent in reducing fever and inflammatory action by the profuse perspiration that it induces—so much so, that it is often an efficacious remedy in the treatment of inflammation.

In the convulsions of infancy, the hot bath, continued from five to ten minutes, is an important part of the treatment.

In order to avoid any possible risk of the sudden immersion in hot water, it is a safe plan to have the bath at about 95° to begin with, and gradually raise the temperature to 100°, or even 105° if profuse perspiration afterwards be desired; in this case, the bath may be continued by an adult twenty minutes or half an hour. On coming out of the bath, after rapidly wiping the surface of the body, a warm blanket should be wrapped round before getting into a warm bed.

When it is desirable to give a hot bath to a child for any febrile malady, or in any case where the child would be frightened at being put into the water, its fears may be disarmed by covering the bath with a blanket, and letting the little patient down gently into the bath.

Vapour Bath (100° to 120°) is of great use in exciting perspiration in catarrh, in simple fever, and in rheumatism. It may be extemporized by sitting on a chair enclosed in a blanket, and having a pail of hot water placed under the chair, adding to the water some red-hot stones, or brick, or iron chain. If a long pipe can be connected with the spout of a large kettle, and made to pass within the blanket, it affords a ready means of making a vapour bath.

Hot-air Bath. (Temperature 100° to 120°.)—This acts in the same way as a vapour bath. It is readily made by burning some spirits of wine under the canopy of blanket. A convenient mode is, after the patient is seated and covered up to the throat with blanket, to place an ounce of spirits of wine in a cup, the cup standing in a basin with some water, then light the spirit and let it burn out.

The Turkish Bath, a combination of these, is useful in rheumatic and other chronic diseases, but requires to be used for medical purposes only under medical advice.

Hydropathy professes the cure of disease by baths of various kinds. It can only be properly practised in establishments especially devoted thereto. It is expensive, and therefore only within the reach of comparatively few.

CHAPTER III.

SLEEP.

No rule can be observed with regard to the proportion of time that should be given to sleep. Much depends upon individual habit and disposition. The active mind and cheerful disposition that is never more happy than when busily employed, and finds its recreation in change of work, will generally sleep soundly and be refreshed by six or seven hours' sleep. Less than this cannot safely be devoted to sleep by any one who does a good day's work, either bodily or mental. There have been those who could abridge their hours of sleep to four, three, or even two hours out of the twenty-four, but they paid the penalty of such an infringement of nature's laws by shortening the number of their days, and embittering them by the impairment of health.

The daily wear and tear of life needs the restoration of sleep to ensure the healthy balance of nervous power, and that equanimity of mind so desirable in this world's strife and turmoil.

Shakspeare was alive to the value of sound, healthy sleep when he made Cæsar say—

> "Let me have men about me that are fat;
> Sleek-headed men, and such as sleep o' nights.
> Yond' Cassius has a lean and hungry look;
> He thinks too much ; such men are dangerous."

Infants and children require more sleep than grown-up persons. In fact the early days of infancy are passed in sleeping, to the infant's great gain. If otherwise its health soon suffers, and shows the want of "balmy sleep." Warmth, sleep, and food are all that are wanted in early infancy. For the first three or four years the mid-day "nap" contributes to the vigour and activity of the young child.

Throughout childhood up to youth from twelve to fourteen hours' sleep is not an undue allowance. At all events, if less time be accorded for sleep, "early to bed" is a golden maxim. The practice of allowing infants and young children to be awake and up until ten or eleven o'clock at night, amid the glare of lights, and perhaps the noise and excitement of festivity, is the most injudicious sort of kindness to which they can be exposed.

CHAPTER IV.

CLIMATE.

THIS word embraces the consideration of many topics which our limits forbid our touching upon; but as the present work will doubtless be read in all parts of the world (at least such is our hope), it would be incomplete without a few remarks in relation to the causation and treatment of disease.

The Effects of Change of Climate.—An inhabitant of a temperate climate going to a tropical country will suffer from excitement of the nervous and vascular systems, by the heat and moisture of the air. The respiratory functions become less active; while there is a decrease of the ordinary action of the kidneys in carrying off the refuse matters of the circulation. The consequence of which is that the skin and the liver have an excess of work thrown upon them (to speak metaphorically, and also exactly), in order to rid the system of certain effete elements which the lungs cannot throw off.

Hence the "seasoning fevers," as they are called, and the disorders of the liver, to which Europeans are specially liable on arrival in a hot climate, and to which full often they render themselves the more obnoxious by injudicious diet.

Europeans visiting hot climates should live abstemiously, taking every means to promote the functions of the skin by moderate exercise and by daily free ablutions. Exposure of the head to the heat of the sun should be carefully avoided, as well as the risk of contracting fever by exposure to dews, the cold, and the malaria of the night air. Warm clothing should be worn at night by new-comers, as the extremes of day and night temperature in tropical regions often pass through a very wide range.

The effects of a warm and moist climate upon the inhabitants of colder regions, in decreasing the functional activity of the lungs and increasing that of the liver and skin, has formed the basis of the recommendation of a change from a cold to a warm climate in pulmonary affections. It is, however, very doubtful whether the relaxing and enervating influence of the heat on the nervous system does not more than counterbalance this functional compensation. Certainly, when disease in the lungs has advanced much, more harm than good generally comes of the migration. On the other hand, the tonic and bracing effect of a cold climate more frequently checks the advance of consumption if care is taken to protect the surface from sudden chills, and so to protect it as to ensure a free circulation of the blood in the skin by active out-door exercise. Our British Hippocrates, Sydenham, was wont to call horse exercise the "palmarium remedy" for consumption, so strongly was he convinced of the importance of out-door exercise. A confirmation of this opinion is to be found in the fact that coachmen (if temperate men) are among the healthiest classes. In the days when locomotion was performed more on horseback than is now the case, it was said that "bagmen," or commercial travellers, enjoyed a singular freedom from consumption. Unfortunately, however, these men, then as now, too often threw away their better heath by their irregularities in other directions.

While the stress of the effects of removal to warm climates upon the inhabitants of temperate regions is thus seen to fall upon the liver and

skin, the reverse is seen to occur when the natives of hot climates migrate to colder countries. The negro, brought direct from Africa to England, will almost surely be the victim of consumption.

Between these extremes there are shades of tolerance of the change, which may be acquired by making the change gradually, by an intermediate residence in regions more temperate but less cold. Dr. Copland writes : "The native of Africa who removes immediately to Europe seldom lives more than two winters in it ; whereas the negro who has been brought to the West Indies, and subsequently to the Southern States of North America, previously to his arrival in more northern countries, and enjoys necessary food and clothing, will often not suffer materially from the change." In these few words lies the secret of protection, to a very great extent, from the effects of change of climate—"necessary food and clothing." Only the necessary food ; not the excessive and superabundant supply of the heating and stimulating food that is too frequently indulged in by Europeans in hot climates.

An important point to be borne in mind on the question of change of climate, is so to time it as to assimilate as much as may be the characters of the climate ; to diminish the effects of the extreme diversity of the regions left or visited ; to go from the cold season of the one to the warm season of the other, or the reverse. For an European returning after a long residence in a hot climate, it is wise to break the change by a short preparatory residence in the warmer parts of Europe—such as the south of France or the south-western coast of England.

The mildness and uniformity of the climate of the southern and south-western counties of England render them available for the change of air so commonly sought by invalids during the winter months. The access of a portion of the gulf stream to our southern and western coasts renders them mild, warm, and moist. The amount of rainfall at Penzance is double that of London. The daily range of the thermometer is less ; it rarely falls so low in the night, nor rises so high in the daytime as in the midland, northern, and eastern counties. Thus, in the hottest summer, when the heat in London is almost intolerable, the temperature is moderated by the sea breezes, and is often quite bearable on the coasts of our southern counties.

Without attempting details which would carry us beyond our limits, we may briefly state that the more sheltered the situation, and the more equable the climate of any place, the better it is adapted for the out-of-door exercise so important for pulmonary affections, and beneficial for chronic inflammatory complaints, with deficient secretion from the mucous surface. The drier atmosphere and more bracing air of exposed positions—such as of our eastern and north-eastern coasts—are adapted to nervous affections and states of debility, accompanied with profuse discharges.

The change of climate must therefore be guided by these several conditions both of place and person, and may further require to be altered according to the changes of the seasons, and according to the special character of the season itself. Thus, it not unfrequently happens that the south coast of England is not suitable for invalids, even so late as June, if easterly winds prevail. The air is then almost as keen as that of the directly eastern coast, and a return inland becomes inevitable.

British and Foreign Climates in relation to Disease.—To enable the reader to select the climate most suitable to the requirements of the particular case he may have in view, we shall enumerate the diseases for which change is most frequently sought, and, by the help of the invaluable treatise of Sir James Clarke, endeavour to direct his choice.

Consumption.—In this disease, change of climate, to be productive of real benefit, must be tried at a much earlier period than is generally done, as it is often delayed a year or two after the period that any good can be expected, and the result is that more harm than good is done thereby. Hence the trial is often not made through the discredit that arises out of its misapplication. It should be borne in mind that consumption is not merely a disease of the lungs, but a general morbid constitutional condition of which the disease in the lungs is but a manifestation. The early treatment must therefore be directed to invigorating the system and improving the quality of the blood. With these objects the climates most suitable for winter residence are those of our southern coast, Madeira, Nice, Pisa, and Rome, with removal during summer months to the drier situations of our own islands.

Chronic bronchitis is an affection that is often mistaken for consumption, and one which, through its persistence and its debilitating and emaciating effects, constitutes a veritable decline. The change from a cold and moist to a mild and dry air relieves the morbid conditions of the mucous surfaces.

The same climates that are of service in consumption are beneficial in chronic bronchitis. When asthma is combined with chronic bronchitis, it is also relieved by the same climate as is found useful in chronic consumption. Torquay and Undercliff, for example, are most adapted to irritable states of the mucous membrane without much secretion; Clifton or Brighton for those in which expectoration is profuse and the system debilitated; Rome, Pisa, Madeira, are suited for the latter class of cases, Nice to the former.

Chronic Rheumatism is benefited by residence in a warm climate, such as the south-western coasts of England, the south of France, Rome, and Pisa.

Gout also derives benefit by a warm climate. The West India islands are especially marked in this respect.

Dyspepsia and nervous affections connected therewith are aggravated by a cold and damp atmosphere, and are greatly relieved by change to a drier and warmer climate; but great care in dieting is needful in order to ensure the full benefit of the change. The use of stimulants must be very cautiously watched. The nervous symptoms associated with dyspepsia are prone to take on the form of hypochondriasis; the change of climate should therefore be accompanied with change of occupation and of amusement. This class of cases rapidly improve under change of scene, and the relinquishment of the cares of business, to say nothing of "throwing physic to the dogs."

CHAPTER V.

DIET IN RELATION TO DISEASE.

In acute diseases the diet should generally be of the simplest and lightest kind, such as beef-tea or mutton-broth, sago, tapioca, arrowroot, or gruel, with, at the same time, some little respect paid to the palate.

Due regard, however, must be paid to the general character and condition of the constitution. For instance, acute disease may occur in a very debilitated state of the health, and then may require the addition to the above of some alcoholic stimulant.

The stomach in such cases would not be able to digest solid food. The absence of this must be supplied by soups, broths, eggs, etc.

In the feeding of invalids, even children, some attention may be paid to their cravings after particular articles. It will often be found that the thing longed for is not injurious, and may be even called for in obedience to some indication by nature. The following incident may serve to illustrate this observation. A child of about four or five years old was suffering under diphtheria, and had got to refuse the port-wine and beef-tea that had been ordered it. It seemed that there was nothing for it but that the child must die from starvation and diphtheria together. One day she woke up from a nap and saw a glass of ale which was being drunk by its mother with her luncheon. This ale the child cried for, but the mother feared to allow her to drink. When appealed to the medical attendant said, "By all means let the child have it; and even put it in her way that she may take it herself without let or hindrance." The next time the child woke up she eagerly clutched at the malt liquor, and drank off a tumblerful. From that moment she began to mend, and for the next forty-eight hours persistently refused everything else, either as food or medicine, and eventually made a good recovery.

When the disease, though acute, is of a less severe character, and is not stamped with extreme debility, the stomach will tolerate light solids, such as white fish, fowls, bread, rice, light puddings, and ripe pulpy fruit and vegetables may be taken with advantage, as the acid allays thirst.

In chronic disease a fuller diet is required, comprising meat, with some stimulant.

Milk.—Milk is the most important article of diet in infancy, and is also both nutritious and digestible in diseases of adult life. A prejudice exists in the minds of many persons to the effect that milk is not easily digested. The opinion is, however, at once refuted by the fact that it forms the nourishment of infants and of young animals of all kinds. Cow's milk, however, is sometimes unsuited to the stomachs of infants brought up by hand, or, from its richness in oil and curd, to the stomachs of persons enfeebled by disease. The best substitute that can be used is asses' or goat's milk. The latter, however, is richer than the former.

Swiss Milk.—A very good form of milk is the "Swiss" or "Aylesbury" milk, which consists of pure milk evaporated down to a syrup, and thickened and preserved with honey. It keeps well in tins, and even for a short time after it has been opened.

For the first three or four months of an infant's life the best food is nurses-milk alone. If for any reason this cannot be given, asses' milk is the best substitute. Next to this cow's milk, diluted with an equal proportion of water in which half a teaspoonful of powdered sugar-of-milk has been dissolved. Cow's milk differs from human milk in its excess of cream and curd. The cream consists almost wholly of oil globules. The addition of a solution of sugar-of-milk reduces it in one direction, and raises it in another, to the level of human milk: thus, sugar-of-milk contains all the saline matters of the milk from which it was made;* therefore, by its addition (with water) to cow's milk, while the curd and oil are diluted, the deficiency of the salts is supplied, and thereby its composition is as nearly as possible equalized or assimilated one to the other.

Most infants will thrive well on this hand-feeding, but there are two points of essential importance to its success. One is the giving the food with regularity. For the first two or three weeks the child should be fed every two hours during the day, and once or twice in the course of the night. The interval should gradually be lengthened after the month.

The same rule as to time should be observed, whatever be the food, whether breast-milk or any substitute.

Feeding-bottles objectionable.—The next point, and one (if possible) more important, is that the feeding-bottle should be most scrupulously cleaned each time immediately after feeding, or small quantities of milk remaining in the tube or teat will become sour. The minutest particle of sour milk taken into the stomach with the other will act after the manner of a ferment, and favour the turning sour of the whole quantity.

It should, however, here be noted, that it does not follow that because when a child vomits its milk it is found curdled, that therefore the whole has been sour at the time of taking it. The first step in the digestion of the milk is that it is curdled by the gastric juice of the stomach, and afterwards dissolved by it. This process, however, is very different from the curdling of milk by its having turned sour out of the stomach, and it has a very different result in the process of digestion.

For the reason above-stated the writer entertains a strong objection to the use of feeding-bottles with the long india-rubber tubes attached to the teat. It is almost an impossibility to wash out the tube after use; at all events, as a matter of fact it too often is only half washed, and so the milk gets turned.

There is another grave objection to these tubes—they engender and foster idleness on the part of the nurse. It is a common practice to put an infant into its bed or cradle, with the teat in its mouth and the bottle in bed, and there to leave it to suckle itself to sleep; which it generally does, sucking the while even after it has fallen asleep and its bottle is emptied. The child goes on sucking at the tube, but getting no food; the

* Sugar of milk is made by the evaporation of the whey of cow's milk to a syrup, and its subsequent crystallization in the same way as sugar candy is made. Sugar of milk is chemically different from common sugar, and does not undergo the fermentation that the latter does. This furnishes an additional reason for its employment.

infant, in popular phrase, "sucks in wind." If it does not exactly suck the wind, its fruitless sucking at a piece of india-rubber keeps up secretion of gastric juice in the stomach. This, having no food to act upon, acts abnormally on the stomach itself, and sets up various disorders of that organ and of the intestines. Such a mode of nursing is little better than the "Gampish" trick of sticking into the child's mouth a raisin in a piece of muslin to "keep it quiet." They are alike occasions to the nurse to evade the duty of really hand-nursing and carrying the child in arms.

Beef-tea is the staple of existence in many cases of illness; it is food and physic both in some fevers. It must be most carefully made, on Liebig's principles. The heat employed should not exceed 150°. A thermometer, however, is not commonly at hand, but the meat should be cut up small and merely covered with water, in a bottle or jar, in a saucepan with cold water, near a fire, so as not to allow it to boil, but merely to stew for three or four hours. The fat may be separated by allowing it to get cold and them skimming it off. Mutton-broth might be made on the same plan, and would be more nourishing than that commonly made.

The principle on which this kind of beef-tea is made is the same as that on which Liebig's Extract of Meat should be prepared—viz., that of extracting the albuminous and meaty parts without extracting the gelatine, which is the least nutritious element of meat.

In the ordinary way of making beef-tea, by boiling lumps of meat, a strong jelly may be formed, and is supposed to show its strength; but each lump is really case-hardened, and the most nourishing part locked up in each piece. The explanation is, that flesh consists largely of albumen, which coagulates at 150° F.; therefore the boiling temperature, 212° F., hardens the outer part at once, and slowly the interior. To give a culinary illustration, the best way to cook a boiled joint of meat is to put it into water already boiling, and continue boiling the requisite time; the outside is at once hardened, and the gravy is locked up inside.

Eggs.—For the same reason the white of eggs, which consists wholly of albumen, is a most excellent medium of nutriment where, for any reason, beef-tea cannot be given. The white of egg stirred into cold or lukewarm milk can often be given to children or other patients who refuse beef-tea. It is tasteless and colourless, therefore its presence can be disguised; whereas the yolk of egg contains fatty matters with albumen, and is easily recognised by the child both from its colour and its flavour.

Water, either as an ordinary article of diet or a means of allaying the thirst in febrile states, requires that great care shall be taken to ensure that it shall be free from impurities.

The most dangerous impurities to which water is obnoxious are gaseous matters, and insoluble animal and vegetable matters.

Gaseous matters and vapours are readily absorbed by water, as is seen in the ordinary experience of placing a basin or tub of water in a newly-painted room, whereby the smell of the paint is quickly removed. Water, by reason of the same property, should never be drunk from a cistern into which there is a waste-pipe having a direct communication with a drain or reservoir. The poisonous gases arising from the decomposing sewage are absorbed by the water, which thus becomes the vehicle for the conveyance of the poison of malignant fevers.

The decomposing animal and saline matters of sewage also readily

percolate a porous soil; so that if a well and a cesspool be near one another, as is often the case both in town and country, the water becomes the channel through which deadly poison is carried.

Rain water received into leaden cisterns, or water in tanks having leaden pipes leading from them, is often contaminated by a portion of that metal becoming oxidized and dissolved, producing colic and other signs of lead-poisoning.

For ordinary domestic purposes water is classed as hard or soft. The latter is rain water; the former spring or river water. These vary much in their degree of hardness, as may readily be noticed by their behaviour with soap. With hard water the soap does not readily make a lather, but curdles on the hand. The source of hardness of water is in the lime and other salts that are dissolved out of the strata of the earth through which it has passed. These may be separated to a considerable extent by boiling, or by the addition of small quantities of bicarbonate of soda. This is the object of some persons who put a small portion of bicarbonate of soda into the teapot when making tea.

Insoluble impurities can be separated by Lipscomb's filters, or by any arrangement by which it is made to pass through fine sand or broken charcoal. The charcoal has the property of absorbing gases from water and rendering it sweet and pure.

Pure water may be obtained by distillation from sea-water, but it is always a difficult process, and requires an elaborate apparatus. Nearly every large ship has now, we believe, a still for this purpose fitted up before going a long voyage.

In the treatment of disease, water is of primary importance, as it allays thirst and fever by diluting the blood and giving the medium by which a poison may be eliminated from the system. In fever and in cholera thirst is often the one great complaint, and the cry is for water! water! This indication of nature may safely be followed, and the patient allowed to drink as freely as he will.

Water is the chief of diuretics; it increases the secretion of urine, and promotes thereby the evacuation of effete or irritant matters from the blood.

Farinaceous Foods.—Farinaceous foods should be cautiously given to young infants. Neither the secretion of the saliva in the mouth, nor of the gastric juice in the stomach, is adapted for their digestion.

Among the farinaceous foods suitable for young children are baked flour, corn flour, biscuit powder, arrowroot, ground rice, &c. It is not possible to say in what cases each of these may be most suitable; what may be easily digested by one child may not agree with another, or with the same child for long together.

After five or six months a crust may be given, but should be carefully watched.

When some teeth are cut, the admixture of solids may occasionally be permitted; but even when all the teeth are cut, it is advisable only to give meat every other or every third day. Soups, beef tea, &c., may be given at other times.

General Diet.—It is scarcely necessary here to enter upon the diet for adults in health, as this will depend very much upon the pursuits and upon the inclinations of each. It is well known that those who work hard

can generally eat well without much regard to what is put before them—"Hunger is their best sauce."

It is where little bodily exertion is undergone, and perhaps very little brain work either, that the appetite is apt to flag and to require pampering: it is in such cases that a diet beyond the plainest and lightest is calculated to become the origin of disease.

It may suffice to offer a few remarks on the digestibility of some articles of food as a guide to invalids, and with reference to the diet recommended under the several headings of disease in the following pages.

It may be stated generally that beef is less digestible than mutton, especially for persons subject to dyspepsia. Beef is more easily digested cold than hot by delicate stomachs. Both these meats will require upwards of three hours for digestion. Salt beef will demand twice the time. Veal, lamb, and young meat generally is not so easy of digestion as the meat of animals killed at maturer age. Pork in any form is less readily digested than other meats.

Fowls, *Poultry*, *Game*, though generally regarded as light and digestible, are not always so in the cases of the invalid or the convalescent; they are not wholly digested much under four or five hours.

Fish, especially the white sorts, are easy of digestion, according as they are plainly cooked. Salted fish are more slowly digested fish, as also are those that are fat, such as salmon. Much, however, depends upon the cooking, and of the adjuncts, the sauces, etc.

Melted butter is usually taken with fish, but is better omitted when they are the food of the invalid. Butter when melted, or prepared in any way over fire, readily becomes altered in its composition, and yields various fatty acids, which are the sources of indigestion. This is more especially the case with pastry such as short pie-crust, etc. For the delicate stomach, fish cannot be too plainly and simply cooked; under these circumstances they form a light and nutritious diet.

Shell Fish, including under the term oysters, mussels, whelks, lobsters, crabs, are all more or less difficult of digestion, and unsuitable for invalids. Oysters are, perhaps, the least open to this objection, but they require three or four hours' digestion, and are not the light nourishment usually supposed, unless very carefully cooked.

Sweetbread and tripe are easy of digestion, as also are the brains of animals.

Liver and kidneys are the reverse of digestible.

Ripe Fruits and Vegetables are more easily digested than any of the preceding articles; but then, as they consist of a large proportion of water, they are not so nourishing as animal substances. Vegetarians supplement the deficient nutritive qualities of vegetables by a liberal allowance of animal matter in the shape of eggs and milk.

Cheese, being almost entirely an albuminous substance, contains a very large amount of nutriment; but from this element being combined with the fatty acids and some of the oily constituents of milk, it is not easily digested by weak stomachs when taken alone. It nevertheless is often useful in promoting the digestion of other food, to which it sometimes acts after the manner of a ferment when taken in small quantities; for instance, after dinner.

Sausages, when fresh, are not unwholesome, and they contain a large quantity of nourishment in a compact form.

Alcoholic Stimulants.—The treatment of disease, and more particularly of convalescence, can scarcely be conducted without the administration of stimulants; but it is obvious that it should be accompanied with emphatic caution lest the use grow into the abuse thereof. An occasional dose may soon become the habitual dram, unless self-denial and self-control be exercised.

We are not here called upon to follow in the wake of those who feel it their duty to expose the errors and weaknesses of their neighbours; suffice it that we admit that in all directions we see a too free indulgence in alcoholic stimulation. There can be no two opinions upon that point. There is no amount of health or wealth that cannot or will not surely be destroyed by any one who determinedly gives himself up to drink.

As has been said over and over again, it is a mistake to argue against the use of anything from its misuse, and so with alcohol. So long as the cares and toils of life are what they are, so long will the human frame be benefited by the judicious use of alcohol. Common sense and science combine to confirm the experience of good and wise men that the moderate use of alcoholic stimulation is to be regarded as indispensable.

The extravagant views and unsupported assertions of the "teetotaller" do infinite harm, by substituting artificial restraints for the wholesome moral influence of daily practice of self-denial and close watch over indulgence of the appetites.

Abundant reasoning could be adduced in refutation of the alleged effects of alcohol were this the place to bring them forward. It has been repeated as a stock argument by indiscreet advocates of the teetotal movement that alcohol is not food, cannot be food under any circumstances or conditions whatever. Experiment, however, contradicts the allegation, by showing that alcohol once taken into the animal system is never again recovered as alcohol alone, but passes out again like all other alimentary substances in various forms of combination as effete refuse—*e.g.*, carbonic acid, water, urea, etc., after—as is daily to be seen in the case of the inveterate drunkard, who takes nothing else—having served to form flesh and blood and diseased structures. Diseased structures require a pabulum as well as the healthy structure, true though it be that the better nourished the more surely they lead to death.

The man who cannot be persuaded to sobriety by the instincts of self-preservation, or the obligations of social claims, will not likely be deterred from intemperance by extravagant assertions of a pseudo-scientific character. Better by far is it to inculcate lessons of morality than lessons of false science. "The schoolmaster is abroad" now in earnest, and we may indulge a confident hope that as education spreads multitudes will learn to appreciate the virtue of sobriety, without being scared by the hideous phantoms of excited imaginations.

The medicinal uses of stimulants are most found in chronic disease, or in acute disease occurring in extremely debilitated states. It is grievously to be lamented that the medical recommendation of stimulants is not always sufficiently guarded and watched. There has been of late a fashion to regard and to teach that all disease proceeds from debility, and therefore that it must be treated with alcoholic stimulants. Allowing

(which we do not) that such might be the case, yet the inference that alcohol is the remedy is by no means conclusive. A supply of wholesome nourishment, with avoidance of the causes of disease, and bodily and mental rest, will be surer in their present effects and safer in future results. Few medical practitioners can pass many years, or even months, without meeting with the melancholy results of intemperance that began with the medicinal use of brandy-and-water, champagne, etc. The possibility is here referred to simply as a warning to those, who, consulting these pages, may feel justified in advising the use of alcoholic stimulants as a means of combating disease, lest they forget to look also to the discontinuance of their use.

As regards the dietetic use of alcoholic stimulants, we have only a few words to add to the caution already given.

Malt Liquors are, as a general rule, the most wholesome of alcoholic beverages. The alcohol is in them so combined with saccharine matter and tonic vegetable principles that it can only be separated by a distillation destructive of all other qualities. A small quantity of mild ale or porter taken with dinner and supper, or luncheon and dinner, supports the strength, and supplies wear and tear.

Wines resemble malt liquors in that when pure the alcohol is in a state of chemical combination that can only be superseded by destructive distillation. They have not, however, so much solid matter suspended in them as malt liquors. They are for this reason better suited to persons of weak digestive powers. The dietetic and the therapeutic uses of wines must depend upon their percentage of alcohol, and upon the development in them of certain acids and spirituous combinations termed ethers, which constitute what judges of wine call the "bouquet." The proportion of unfermented sugar also is a point to be considered in selecting wine for invalids. Thus, there are *sweet* and *astringent* wines, as there are *red* and *white* wines, and there are wines in which the fermentation of the sugar is checked and the sparkling or effervescing wine is produced.

Effervescing wines, Champagne and Moselle, are among the most valuable wines for medicinal purposes. The free carbonic acid they contain renders them very serviceable in sickness and vomiting, while the alcohol, being in some peculiar state of combination, is more volatile, acts as a more rapid stimulant, effects passing off more rapidly than those of other and stronger wines.

Astringent wines, such as Burgundy, Hungarian, Bordeaux, etc., are less liable to ferment in the stomach. Port, Madeira, sherry, Marsala, are all stronger wines, and are said to be highly brandied, and therefore less wholesome for ordinary consumption; but they are (if moderately good) more useful for medicinal purposes than the lighter wines, which may be safer for daily use dietetically. In this matter, however, as in many others where eating and drinking are concerned, quantity is often a more important element in the question than quality. There is, moreover, so much in fashion that it is almost impossible to say which wines are best. Moderation is the golden rule.

Spirits, the type of which may be taken to be brandy, are only of value as medicinal agents, and for these purposes they are sometimes invaluable—*e.g.*, in low fevers, in some inflammations, and in states of

debility, in sickness, and generally as indicated under the several headings of diseases in the preceding pages. We have no hesitation in affirming that raw or diluted raw spirits can never be advantageously used merely as ordinary beverages by those who can obtain wholesome malt liquor or wines.

The habit of spirit-drinking (as grog every night) as practised by many "very respectable people" in the middle classes, is not one whit morally or physically better than the habits of the poor besotted creatures who swarm in and out of the London gin palaces. With the moral aspects of the habit it may be said that we are not concerned, but of the physical aspects we feel morally bound by a solemn responsibility to speak. From our own personal observation we would warn all whom it may concern, that the "night-cap," as it is miscalled, gradually generates disease of the brain, liver, kidneys, with all the horrible train of diseases—delirium, paralysis, dropsy, *cum multis aliis.*

CHAPTER VI.

DISINFECTION.

THE following directions, prepared from instructions published by the Association of Medical Officers of Health in London, will be found useful for the prevention of the spread of infectious diseases :—

"When a person is attacked, one of two things should immediately be done. The sick person should either be put into a room, apart from others, the room being stripped first of all carpets, curtains, and unnecessary furniture, or where this cannot be done, should be sent to hospital.

"When possible, all persons who have not had the disease should be sent out of the house to lodge elsewhere.

"The infectious principle of the disease is given off by the breath, and by all the discharges of the sick person; also from the skin until long after apparent recovery, so long indeed as any roughness remains upon it.

"Persons with sore throat, when scarlet fever is about, sometimes give scarlet fever to other people.

"To prevent it coming off by the breath, the mouth, throat, and nose should be very frequently washed with a disinfecting solution, such as water containing some Condy's fluid or chloride of soda, by gargling, swabbing, or syringing.

"All vessels intended to receive the discharges from the bowels, etc., should have a dessert-spoonful of carbolic acid with a little water constantly kept in them.

"Rags should be used instead of handkerchiefs for removing or wiping away the discharges from the throat or nose, and they should then be burned.

"The air of the room should be kept sweet and disinfected, and prevented from mixing with the other air of the house. This may be done

by constantly keeping up a small fire, or by hanging over the doorway an old sheet well sprinkled with carbolic acid, or by both these methods.

"No unnecessary communication should take place between the nurse in the sick-room and the other inmates of the house. Nurses or attendants should wear glazed or smooth dresses in preference to rough and woollen ones, and should wash their hands before eating.

"All handkerchiefs, towels, sheets, articles of clothing, etc., should be steeped in boiling water containing carbolic acid, or Condy's fluid, or chloride of soda (a teaspoonful to the gallon), before they are taken out of the sick room.

"Whenever slops from the sick room are thrown down closets, sinks, or drains, a teaspoonful of carbolic acid in a basinful of water should be thrown down after them."

During Recovery and Convalescence.—"Warm baths with soap should be used repeatedly until all roughness of the skin has disappeared : a little carbolic acid added renders the washing more effective for disinfection.

"Until all roughness of the skin has disappeared, the person should not be allowed to mix with the rest of the family, and then only in new clothes, or in clothes which have been thoroughly disinfected."

In the Event of a Fatal Termination.—"The body should not be removed into another room to spread infection over the house. It is still infectious.

"No articles of bedding or clothing should be removed from the room until disinfected as formerly stated.

"In washing the body, carbolic acid (a dessert-spoonful to the gallon of water) should be used.

"The body should be put into the coffin as soon as possible, *with a disinfectant.* Macdougal's powder may be used, sprinkled freely underneath and over the corpse, or rags soaked in strong carbolic acid may be laid beneath it and over it (beneath the clothing). The coffin should be screwed down and the body *buried as soon as possible.*"

Subsequent Disinfection of the House, &c.—"The infection hangs about a room or house for a very long time, and is difficult to dislodge. Fumigation by sulphur, however, may be employed by any one, the paper being previously wetted with carbolic acid, stripped off, and burned. A quarter of a pound of brimstone, broken into small pieces, should be put into an iron dish (or a lid of an iron saucepan turned upside down) supported by a pair of tongs over a bucket of water. The fireplace and outer openings, such as the crevices of the windows, are then to be closed by pasting paper over them, and a shovelful of live coals is to be put upon the brimstone. The door is then to be quickly shut, the crevices pasted up with paper, and the room kept closed for five or six hours. Articles of clothing hung up loosely, or left uncovered in the room, are fumigated at the same time.

"After this, a thorough cleaning should be made ; everything that can be, washed with a little carbolic acid in the water, and boiled. The room should then be lime-washed, and afterwards left unoccupied with the windows open for a week or a fortnight."

GENERAL INDEX.

GENERAL INDEX.

M M

THE END.

LONDON:
R. CLAY, SONS, AND TAYLOR,
BREAD STREET HILL.

Elegant Presentation Books.

In royal 4to, price 10*s.* 6*d.*, half bound, picture cover.

BARON MUNCHAUSEN:

HIS ADVENTURES.

Comprising Eighteen magnificent Coloured Plates from original designs by BICHARD, and full Descriptive Text.

In square crown 8vo, price 9*s.*, cloth gilt, gilt edges, Fourth Edition, with New Illustrations.

CYCLOPÆDIC SCIENCE SIMPLIFIED.

By Professor PEPPER, of the Polytechnic Institution.

Embracing MAGNETISM (including the Telephone), LIGHT, HEAT, ELECTRICITY, PNEUMATICS, ACOUSTICS, CHEMISTRY. With upwards of Six Hundred Illustrations.

In fcap. 4to, price 9*s.*, cloth gilt, gilt edges.

OTHER MEN'S MINDS;

Or, Seven Thousand Choice Extracts on History, Science, Philosophy, Religion, &c. From Standard Authors. Classed in Alphabetical Order.

Edited and Selected by E. DAVIES, D.D.

THE STANDARD BOOK OF GAMES AND SPORTS.

In square crown 8vo, price 7*s.* 6*d.*, cloth gilt.

THE MODERN PLAYMATE.

A New Book of Games, Sports, and Diversion for Boys of all Ages. Compiled and Edited by Rev. J. G. WOOD. Fully Illustrated.

In square crown 8vo, price 7*s.* 6*d.*, cloth gilt and gilt edges, THE

HOME BOOK FOR YOUNG LADIES.

An Original Work, with 250 Choice Illustrations.

Edited by Mrs. VALENTINE.

This Volume aims to be a Standard Book for Play, Work, Art, Duty—Games for Play Hours, Work for Leisure in the Home Circle, Art for the Cultivation of Taste, and Duty to ensure Home Happiness.

Elegant Presentation Books.

POPULAR WORKS BY T. RYMER JONES, F.R.S.

In square crown 8vo, price 7*s.* 6*d.* each, cloth gilt and gilt edges.

MAMMALIA:

A Popular Introduction to Natural History.

With 200 Illustrations.

THE ANIMAL CREATION:

A Popular Introduction to Zoology.

With 500 Illustrations.

THE NATURAL HISTORY OF BIRDS:

A Popular Introduction to Ornithology.

With 200 Illustrations.

In square crown 8vo, price 7*s.* 6*d.*, cloth, gilt edges.

THE ANGLER'S SOUVENIR.

Edited by G. CHRISTOPHER DAVIES.

With Original Woodcuts and 33 Page Steel Engravings.

In large crown 8vo, price 7*s.* 6*d.*, cloth, gilt edges.

HERALDRY, ANCIENT AND MODERN.

Including BOUTELL'S HERALDRY. Edited and Revised by S. T. AVELING. Containing nearly 500 Illustrations.

In square crown 8vo, price 5*s.* cloth gilt ; or 6*s.* with gilt edges.

SWISS FAMILY ROBINSON.

A New Translation, by Mrs. H. B. PAULL, from the Original Edition. With numerous choice Illustrations.

In square fcap., price 2*s.* 6*d.*, cloth, gilt edges.

LANGUAGE & SENTIMENT OF FLOWERS.

Compiled and Edited by L. V. With Floral Records and Page Illustrations, printed in Colours.

The Chandos Poets.

Under this distinctive title are now published New and Elegant Volumes of Standard Poetry, fully Illustrated, well Edited, and printed with a Red-line Border, Steel Portraits, &c.

In crown 8vo, price 7*s.* 6*d.* each, cloth gilt, gilt edges; or morocco, 16*s.*

The Poetical Works of Longfellow.

The Legendary Ballads of England and Scotland. Edited and compiled by JOHN S. ROBERTS.

Scott's Poetical Works. With numerous Notes.

Eliza Cook's Poems. A Complete Edition, with Portrait and Steel Illustrations.

Moore's Poetical Works. With numerous Notes.

Cowper's Poetical Works. Edited from the best Editions.

Milton's Poetical Works. Edited from the best Editions.

Wordsworth's Poetical Works.

Byron's Poetical Works. With Explanatory Notes.

Mrs. Hemans' Poetical Works. With Memoir, &c.

Burns' Poetical Works. With Explanatory Glossarial Notes.

Hood's Poetical Works. With Life.

Campbell's Poetical Works. With Memoir.

Coleridge's Poetical Works. With Memoir, Notes, &c.

Shelley's Poetical Works. With Memoir, Notes, &c.

Pope's Homer's Iliad & Odyssey. With Flaxman's Illustrations.

Pope's Poetical Works. With Original Notes.

Mackay's Complete Poetical Works. Revised by the Author.

Herbert's (George) Poems and Prose. With Notes, &c.

Heber's (Bishop) Poetical Works. With Notes, &c.

Keble's (John) The Christian Year.

Uniform in size, price, and style, but without Red-line.

Poets of the Nineteenth Century. With 120 Illustrations by J. E. MILLAIS, TENNIEL, PICKERSGILL, Sir J. GILBERT, HARRISON WEIR, &c.

The Spirit of Praise. A Collection of Hymns, Old and New, with upwards of One Hundred choice Illustrations.

Christian Lyrics. From Modern Authors. With Two Hundred and Fifty Illustrations.

Shakspeare: The Plays and Poems. 1200 pp., with Portrait.

Montgomery's (James) Poetical Works. With Prefatory Memoir and Explanatory Notes. 100 Original Illustrations.

The Chandos Library.

A Series of Standard Works in all Classes of Literature.

In crown 8vo, price 3*s.* 6*d.* each, cloth gilt.

The Percy Anecdotes. By REUBEN and SHOLTO PERCY. Verbatim Reprint of Original Edition. Introduction by JOHN TIMBS. Original Steel Portraits, and Index. Three Vols., each Complete in itself.

Pepys' Diary and Correspondence. With Seven Steel Portraits arranged as a Frontispiece, Memoir, Introductory Preface, and full Index.

Abbeys, Castles, and Ancient Halls of England and Wales. Their Legendary Lore and Popular History—South, Midland, North. By JOHN TIMBS, Author of "Curiosities of London," and ALEXANDER GUNN. New Frontispiece. Three Vols. Each Volume Complete in itself.

Johnson's Lives of the Poets; with Critical Observations on their Works, and a Sketch of the Author's Life by Sir WALTER SCOTT.

Book of Authors. A Collection of Criticisms, Ana, Mots, Personal Descriptions, &c. By W. CLARK RUSSELL.

Evelyn's Diary and Correspondence. Edited by BRAY. 784 pp. With Frontispiece and full Index.

Gibbon's Decline and Fall of the Roman Empire. With Portrait. Three Vols.

A Century of Anecdote. Compiled and Edited by JOHN TIMBS. With Frontispiece.

Pope's Homer's Iliad and Odyssey. FLAXMAN'S Illustrations.

Scott's Lives of Eminent Novelists and Dramatists.

Don Quixote (Life and Adventures of). By CERVANTES.

The Koran: A verbatim Reprint. With Maps, Plans, &c.

The Talmud (Selections from). H. POLANO. Maps, Plans, &c.

Gil Blas (The Adventures of). By LE SAGE.

Carpenter's Popular Elocutionist. With Portrait.

Walton and Cotton's Angler. Edited, with Notes, by G. CHRISTOPHER DAVIES.

The Peninsular War and the Campaigns of Wellington in France and Belgium. By H. R. CLINTON.

Fugitive Poetry of the Last Three Centuries. Edited by J. C. HUTCHIESON.

White's Natural History of Selborne. Numerous Illustrations.

Lamb's Poems and Essays.

Spenser's Poetical Works. With Portrait.

In crown 8vo, cloth gilt, profusely Illustrated, price 5*s.* each.

THE ROMANCE OF HISTORY.

COMPRISING—

England. By HENRY NEELE. 21 Illustrations by T. LANDSEER.

France. By LEITCH RITCHIE. 21 Illustrations by T. LANDSEER.

Spain. By Don T. DE TRUEBA. Illustrations by J. K. MEADOWS.

Italy. By C. MACFARLANE. 21 Illustrations by T. LANDSEER.

India. By the Rev. HOBART CAUNTER, B.D. With Illustrations.

Warne's 3s. 6d. Lansdowne Novels and Tales.

Small crown 8vo, gilt edges, with Original Illustrations.

One Year; or, The Three Homes.
By F. M. P.

On the Edge of the Storm.
By the Author of "Denise."

Fair Else, Duke Ulrich, &c.
By Author of "On the Edge of the Storm."

Clare Savile. By Miss LUARD.
Lady Betty. By CHRISTABEL COLERIDGE.
Vivia: A Modern Story. By FLORENCE WILFORD.
Nigel Bartram's Ideal. By FLORENCE WILFORD.
Hanbury Mills. By CHRISTABEL COLERIDGE.
Anne Dynevor. By MARIAN JAMES.
Tales, Old and New. By Author of "Sydonie's Dowry," &c.
Denise. Ditto ditto.
Evelyn Howard. By Mrs. H. B. PAULL.
The Knight's Ransom. By Mrs. VALENTINE.
May and her Friends. By E. M. B.
Arum Field; or, Life's Reality.
By Mrs. J. MERCIER.

Warne's Picture Playmates.

ELEVEN DISTINCT VOLUMES.

Each Volume containing from 32 to 48 pages of Coloured Illustrations and Letterpress Descriptions.

In super-royal 8vo, price 3*s.* 6*d.* each, cloth gilt, gilt edges.

1. **Book of Trades Playmate.**
3. **The Cinderella Playmate.**
4. **Cock Robin's Playmate.**
5. **The Robins' Playmate.**
8. **Nursery Songs Playmate.**
9. **The Alphabet Playmate.**
10. **The Dash's Holiday Playmate.**
11. **The Daisy Playmate.**

Warne's 3s. 6d. "Hopeful Enterprise" Library.

With Illustrations, Coloured or Plain.

In crown 8vo, cloth gilt.

Jack Stanley; or, The Young Adventurers. By EMILIA MARRYAT (Mrs. NORRIS).

White's Natural History of Selborne. Edited by G. C. DAVIES.

Robinson Crusoe. By DEFOE.

Swiss Family Robinson. Unabridged.

The Young Lamberts. A Boy's Adventures in Australia. By AUGUSTA MARRYAT.

Heroism and Adventure. A Book for Boys. Edited by Mrs. VALENTINE.

Cavaliers and Roundheads. By JOHN G. EDGAR.

Among the Tartar Tents; or, The Lost Fathers. By ANNE BOWMAN.

Who Won at Last. By J. T. TROWBRIDGE.

Cris Fairlie's Boyhood. A Tale of an Old Town. By Mrs. EILOART.

God's Silver; or, Youthful Days. By the Hon. Mrs. GREENE.

Martin Noble; or, A London Boy's Life. By JOHN G. WATTS.

The Young Squire. By Mrs. EILOART.

Captain Jack; or, Old Fort Duquesne.

Wild Sports and Savage Life in Zulu Land.

Edgeworth's Moral and Popular Tales.

Edgeworth's Early Lessons.

Bunyan's Pilgrim's Progress. With Coloured Plates.

Sea Fights and Land Battles.

Adrift in a Boat and Washed Ashore.

Uncle Tom's Cabin. By H. B. STOWE.

Warne's 3s. 6d. "Home Sunshine" Library.

With Illustrations.

Crown 8vo, cloth gilt, new style.

Seven to Seventeen. By M. M. BELL.

Kate Duncan; or, A Hidden Wrong. By Mrs. VALENTINE.

Seventeen to Twenty-one. By M. M. BELL.

The Carbridges. By M. BRAMSTON.

WARNE'S

2s. 6d. "Golden Links" Series of Gift-Books.

In square fcap. 8vo, with Original Illustrations, cloth gilt.

Golden Links. By AUNT FRIENDLY.

Tales for Boys and Girls.

Sylvia and Janet. By A. C. D.

Margaret Woodward; or, Summerleigh Manor. By the Author of "Mdlle. Mori."

Sydonie's Dowry. By the Author of "Denise."

Father Clement. GRACE KENNEDY.

The Basket of Flowers. With 12 Coloured Plates.

The Story of the Robins. With 12 Coloured Plates.

Madeleine's Trial; and other Stories. By Madame PRESSENSE.

Hester's Fortune; or, Pride and Humility.

Campanella; or, The Teachings of Life. By Mrs. MERCIER.

Picciola; or, The Prison Flower. By X. B. SAINTINE.

Christabel Hope; or, The Beginnings of Life. By Mrs. MERCIER.

Home Recreations and Foreign Travel. Coloured Plates.

Eildon Manor: A Tale for Girls.

Marian and her Pupils. By CHARLOTTE LANKESTER.

First Steps in the Better Path. By AUNT FRIENDLY.

Filling up the Chinks. By Hon. Mrs. GREENE.

Two Years of School Life. By Madame DE PRESSENSE. Edit. by Author of "The Heir of Redclyffe."

Laura and Lucy; A Tale for Girls. By CHARLOTTE ADAMS.

Lucy West; or, The Orphans of Highcliffe. By Mrs. H. B. PAULL.

BY CATHERINE D. BELL (COUSIN KATE).

Square fcap. 8vo, gilt, with Illustrations, (new style).

Lily Gordon, the Young Housekeeper.

The Huguenot Family; or, Help in Time of Need.

Sydney Stuart; or, Love Seeketh Not her Own.

Mary Elliott; or, Be Ye Kind to One Another.

Hope Campbell; or, Know Thyself.

Horace and May; or, Unconscious Influence.

Ella and Marian; or, Rest and Unrest.

Kenneth and Hugh; or, Self-Mastery.

Rosa's Wish, and How she Attained it.

Margaret Cecil; or, I Can because I Ought.

The Grahames; or, Home Life.

Home Sunshine; or, The Gordons.

Aunt Ailie; or, Patience and its Reward.

Warne's Children's Music Books.

WITH APPROPRIATE HYMNS, DITTIES, &c.

In demy oblong, price 1*s.* each, sewed.

The Children's Hour. Twelve Songs for the Little Ones, set to Music. Edited by Mrs. G. H. CURTEIS.

Songs for our Little Friends. Twelve Nursery Ditties. Set to Music by E. R. B.

The Children's Musical Gem. Fourteen Nursery Ditties. Edited and set to Music by Madame BORRANI.

The Nursery Nightingale. Edited, &c., by Madame BORRANI.

Demy 4to, price 5*s.*, cloth gilt, and gilt edges.

The Children's Musical Companion. Comprising the above Books bound in One Volume.

WARNE'S 2*s*. "INCIDENT AND ADVENTURE" LIBRARY—*continued.*

Evenings at Home. By AIKEN and BARBAULD.
Sandford and Merton. By THOMAS DAY.
Robinson Crusoe. By DANIEL DEFOE.
Willis the Pilot. A "Sequel to "Swiss Family Robinson."
St. George's Key. By W. E. COGHLAN.
Brave Days of Old. Selected and Edited by Mrs. VALENTINE.
Daring and Doing. Selected and Edited by Mrs. VALENTINE.
Jarwin and Cuffy. A Tale for Boys. By R. M. BALLANTYNE.
Adrift in a Boat. A Story for Boys. By W. H. G. KINGSTON.
The Silver Lake; or, Lost in the Snow. By R. M. BALLANTYNE.
The Silver Cup; or, True Heroism. A Book for Boys.
My Dog Match. By HOLME LEE.
Uncle Tom's Cabin. By H. B. STOWE.

Warne's 1s. 6d. "Birthday Series" of Gift-Books.

Large fcap. 8vo, with Original Illustrations, cloth, gilt edges.

The Good Shepherd. By Mrs. VALENTINE.
Charlie and Ernest. By M. BETHAM EDWARDS.
The Lost Heir; or, Truth and Falsehood.
Henry Burton; or, The Reward of Patience.
The Torn Bible; or, Hubert's Best Friend.
Cousin Annie; or, Heart and Hand.
Maud Latimer; or, Patience and Impatience.
Fritz; or, Experience Teacheth Wisdom.
William Henry's School-Days. By A. M. DIAZ.
Children's Sayings; or, Early Life at Home.
By CAROLINE HADLEY.
Round the Fire Stories.
The Burtons of Burton Hall. By Hon. Mrs. GREENE.
My Sunday Companion.
Bowman's Poetry. (Plain edges.)
Excelsior Poetry Book. 100 Illustrations. (Plain edges.)

BY CATHERINE D. BELL.

Arnold Lee: or, Rich Boys and Poor Boys.
An Autumn at Karnford.
Allen and Harry.
Georgie and Lizzie; or, Self-Denial.
The Douglas Family; or, Friendship.

Aunt Louisa's London Toy-Books.

With large Original Page Plates by the First Artists, in the very best style of Colour Printing, with Letterpress Descriptions.

In demy 4to, 1*s.* each, picture covers; or Mounted on Linen, 2*s.*

1. The Railway A B C.
2. A, Apple Pie.
3. Nursery Rhymes.
4. Childhood's Happy Hours.
5. Nursery Songs.
6. Life of a Doll.
8. John Gilpin.
9. Sing a Song of Sixpence.
10. The Sea-side.
11. Robin's Christmas Eve.
13. Alphabet of Fruits.
14. Frisky the Squirrel.
15. Country Pets.
16. Pussy's London Life.
17. Hector the Dog.
18. Dick Whittington.
19. The Fairy at the Fountain (Diamonds and Toads).
20. Lily Lily Sweetbriar.
21. Uncle's Farmyard.
22. London Alphabet.
23. Country Alphabet.
24. Alphabet of Games.
25. Household Pets.
26. Hare and Tortoise.
27. Hey Diddle-Diddle.
28. World-Wide Fables.
29. The Birthday Party.
30. King, Queen, and Knave of Hearts.
31. Cock Robin's Courtship, Marriage, &c.
33. The Nursery Alphabet.
34. Good Children.
35. Bruin the Bear.
36. Dame Trot and her Cat.
37. Home for the Holidays.
38. Punch and Judy.
39. My Children.
40. Jack and Jill.
41. The Faithful Friend.
42. Ten Little Niggers.
44. Zoological Gardens.
45. Ditto.
46. Ditto.
47. Puzzle Alphabet.
50. My Favourites.
51. Home Pets.
52. John Bull's Farmyard Alphabet.
53. Tabby's Tea-Fight.
54. Rover's Dinner-Party.
55. London Characters.
56. The Globe Alphabet.
57. Famous Dogs. LANDSEER.
58. Noted Dogs. Ditto.
59. Famous Horses. HERRING.
60. Noted Horses. Ditto.
61. Childhood's Playtime.
62. Our Boys and Girls.
63. Alphabet of Animals.
64. New Year's Eve.
65. Kingdom of the Greedy.
66. Little Dame Crump.
67. Childhood's Delight.
68. Hush-a-bye, Baby.
69. Tottie's Nursery Rhymes
70. Cinderella.
71. Red Riding Hood.
72. Old Mother Hubbard.
73. Little Bo-Peep.
74. Hop o' my Thumb.

Aunt Louisa's Sunday Picture Books.

With Twelve Original Plates printed in Colours.

1. Joseph and his Brethren.
2. The Proverbs of Solomon.
3. King David, The Story of.
4. Wonders of Providence.
5. Parables of Our Lord.
6. Children of Old Testament.
7. Children of New Testament
8. Childhood of Christ.

Aunt Louisa's Comicalities.

With large Original Coloured page Plates, and Descriptive Letterpress.

In demy 4to, 1*s*. each, picture covers ; or Mounted on Linen, 2*s*.

1. Droll Pictures.
2. Humorous Pictures.
3. Funny Pictures.
4. Comic Pictures.

Aunt Louisa's Packets of Coloured Scraps.

Packet containing Twenty-five Coloured Pictures ... 1*s*.
Packet containing Fifty Coloured Pictures ... ... 3*s*.
Packet containing One Hundred Coloured Pictures... 6*s*.

The above Packets will be found to contain a varied assortment of Coloured Pictures, suitable for Scrap Books, or the Decoration of Screens, &c.

Warne's Picture Puzzle Toy-Books.

Printed in Colours by KRONHEIM, with full Descriptions.

Demy 4to, price 1*s*. each, stiff fancy wrappers.

The House we Live in.
The Nursery Play Book.
Holiday Fun.
The Doll and her Dresses.
Book of Trades.
The Horse.

Or the first Four Books Complete in One Volume, 5*s*.

These Toy-Books, consisting of Six Pages of Coloured Illustrations, with Key Plates embodying 200 *figures, will occupy the attention of Children for days, the figures in the key plates having to be cut out and inserted in their proper places in the illustration, forming an endless amount of instruction and amusement.*

In demy 4to, picture wrappers, 1*s.*; Mounted on Linen, 2*s.*

LEAR'S BOOK OF NONSENSE.

Splendidly printed in Colours by DALZIEL Brothers, &c.

Four Distinct Varieties, each Complete in itself.

Warne's National Nursery Library.

In pott 8vo, price 1*s.* each, picture boards; or cloth gilt, 1*s.* 6*d.*

The Red Riding-Hood Volume.
The Cinderella Volume.
The Nursery Rhymes, Tales, and Jingles Volume.
The Jack and Jill Volume.
The Royal Alphabet Volume.

*** *Each Book contains* 40 *Coloured Illustrations and Five Nursery Tales.*

Æsop's Fables, with 80 Engravings, Frontispiece and Vignette.

Warne's Picture Natural History.

In pott 8vo, price 1*s.* each, picture boards; or cloth gilt, 1*s.* 6*d.*

1. Animals Volume. | 2. Birds and Animals Volume.
3. Fish, Insects, and Reptiles Volume.

*** Each with 32 pages of Coloured Plates and descriptive Letterpress.

Warne's National Sunday Library.

In pott 8vo, price 1*s.* each, picture boards.
By the Rev. HOBART CAUNTER, D.D.

Old Testament. 80 Page Illustrations.
New Testament. 48 Page Illustrations.

Warne's Victoria Toy Books.

Nursery Stories, Natural History Packets.

12 Books—96 Pages of Coloured Illustrations.

ONE SHILLING PACKETS.

Packet No. 1.	Nursery Stories.	10 varieties.
Packet No. 2.	Nursery Stories.	10 varieties.
Packet No. 3.	Alphabets.	5 varieties.
Packet No. 4.	Natural History.	12 varieties.

Warne's One Shilling Text-Books.

In royal 32mo, price 1*s*. each, cloth gilt, with Illuminated Frontispiece.

Daily Bread on the Waters. By M. M. POLLARD.
Old Testament Precepts, for Every Day in the Year.
New Testament Precepts, for Every Day in the Year.
"A Name which is above every name."

Warne's Bijou Text-Books.

With Text and Verse for each Day.

In demy 48mo, 6*d*. each, cloth, red edges; 1*s*. each, calf limp, gilt edges.

Rills from the River of Life.
The Dew of Hermon.
Daily Gleanings.
Echoes of Heavenly Music.
The Redeemer's Counsel.
The Watchwords of Eternity.
Daily Bread. [Large Type.]

The above are a very nicely printed Set of Books, in a handy Pocket size, and neatly bound for Presentation.

Warne's Useful Manuals.

In fcap. 8vo, price 6*d*. each, cloth limp.

Ladies' Model Letter Writer.
Gentlemen's Model Letter Writer.
Business Letter Writer.
Lovers' Correspondent.
Juvenile Correspondent.
Easy Reading for Adult Learners.
Sick Room Attendant.

In fcap. 8vo, price 1*s*. 6*d*., cloth gilt.

Bowman's Poetry from the Best Authors, Ancient and Modern.

Warne's "Excelsior" Library.

In fcap. 8vo, price 2*s*. 6*d*. each, cloth gilt.

Bunyan's Pilgrim's Progress. Large Type.

Bogatzky's Golden Treasury. Large Type.

In imperial 32mo, cloth, gilt edges, price 1*s*. 6*d*. ; rims and clasp, 2*s*. ; calf limp, or morocco, 2*s*. 6*d*. ; or imitation ivory, 3*s*. 6*d*.

Illuminated Scripture Text-Book.
With Interleaved Diary for Memoranda, and 365 Coloured Illustrations, Coloured Frontispiece, &c.

In fcap. 8vo, Large Edition, limp cloth, red edges, price 2*s*. 6*d*. ; or bevelled boards, gilt and gilt edges, 3*s*. 6*d*.

Illuminated Scripture Text-Book.
With Interleaved Diary for Memoranda, and 365 Coloured Illustrations, Coloured Frontispiece, &c.

In imperial 32mo, cloth, gilt edges, price 1*s*. 6*d*. ; rims and clasp, 2*s*.; calf limp, or morocco, 2*s*. 6*d*. ; or imitation ivory, 3*s*. 6*d*.

The Illustrated Birthday Motto-Book; or, Calendar of Nature. With Interleaved Memoranda.

Wedding Chimes. Nota of Marriages of Relatives and Friends. With Interleaved Memoranda.

Immortelles. A Souvenir of Departed Relatives and Friends. With Interleaved Memoranda.

In imperial 32mo, price 1*s*., cloth gilt.

The Birthday Motto-Book. With Interleaved Diary.

Warne's Handy Books.

Elegantly bound, price 1*s*. each, cloth, gilt edges.

The Language of Flowers.
The Ball-Room Guide.
Etiquette for Ladies and Gentlemen.
Garland of Wild Roses.
The Lily and the Rose.
Forget-me-Not.
Holly and the Mistletoe.
True Lovers' Knot.
The Evergreen.

Warne's Star Series.

In this Series, from time to time, will be issued a very popular edition of well-known Books, many of them Copyright, and published at prices, united with style and completeness, hitherto unequalled.

ONE SHILLING VOLUMES,

Stiff picture wrappers; or cloth gilt, *1s. 6d.*

1. Daisy. ELIZ. WETHERELL.
2. Daisy in the Field. Ditto.
3. Nettie's Mission. A. GRAY.
4. Stepping Heavenward.
6. Sceptres and Crowns, and The Flag of Truce. ELIZ. WETHERELL.
7. Dunallan. GRACE KENNEDY.
8. Father Clement. Ditto.
14. From Jest to Earnest. Rev. E. P. ROE.
15. Mary Elliot. CATH. D. BELL.
16. Sydney Stuart. Ditto.
17. Picciola. X. B. SAINTINE.
18. Hope Campbell. C. D. BELL.
19. Horace and May. Ditto.
20. Ella and Marian. Ditto.
21. Kenneth and Hugh. Ditto.
22. Rosa's Wish. Ditto.
23. Margaret Cecil. Ditto.
24. The Grahams. Ditto.
25. Home Sunshine. Ditto.
26. What Katy Did at School. SUSAN COOLIDGE.
28. Wearyfoot Common. LEITCH RITCHIE.
29. Sydonie's Dowry.
30. Aunt Jane's Hero.
31. Aunt Ailie. CATH. D. BELL.
32. What Katy Did. COOLIDGE.
34. Merchant's Daughter. MRS. S. C. HALL.
35. Daily Governess. Ditto.
38. Flower of the Family. MRS. E. PRENTISS.
39. Madame Fontenoy. Author of "Denise."
41. Toward Heaven. MRS. E. PRENTISS.
42. Little Camp on Eagle Hill
45. The Prince of the House of David. J. H. INGRAHAM.
46. The Pillar of Fire. Ditto.
47. Throne of David. Ditto.
48. Admiral's Will. M. M. BELL.
49. Sylvia and Janet. A. C. D.
51. That Lass o' Lowrie's. F. H. BURNETT.
53. Cloverly. MARY S. HIGHAM.
54. Alec Green. SILAS K. HOCKING.
55. Sweet Counsel. S. TYTLER.
56. The Milestones of Life.
57. Little Women. LOUISA M. ALCOTT.
58. Little Wives. Ditto.
59. Barriers Burned Away. E. P. ROE.
60. Opening a Chestnut Burr. E. P. ROE.
61. Uncle Tom's Cabin.

EIGHTEENPENNY VOLUMES,

Stiff picture wrappers; or cloth gilt, *2s.*

9. The Wide, Wide World.
10. Queechy.
11. Melbourne House.
12. Drayton Hall
13. Say and Seal.
36. The Lamplighter.
37. Helen. MARIA EDGEWORTH.
43. Ellen Montgomery's Bookshelf.
44. The Old Helmet.
50. Straight Paths & Crooked Ways. By MRS. PAULL.
52. Englefield Grange. Ditto.
62. Little Women and Little Wives.

Warne's Atlases.

Revised to the date of the Berlin Treaty, 1878.

FULLY COLOURED AND STRONGLY BOUND.

In imperial 4to, cloth gilt, price 12*s*. 6*d*.

THE MODERN ATLAS OF THE EARTH.

With complete Alphabetical Index of the Latitudes and Longitudes of 70,000 Places; 64 Coloured Maps. By WILLIAM HUGHES, F.R.G.S.

In super-royal 8vo, price 6*s*., cloth gilt.

THE COLLEGE ATLAS.

Containing 36 Coloured Maps, with full Descriptive Index of more than 32,000 Places, and Table of Comparative Heights of the Principal Mountains.

In square imperial, price 2*s*. 6*d*., cloth gilt.

THE JUNIOR COLLEGE ATLAS.

Containing 34 Coloured Maps. With full Descriptive Index of 7,000 References. Ditto, stiff boards, cloth back, price 2*s*.

In super-royal 8vo, price 3*s*. 6*d*., cloth, gilt edges.

THE JUNIOR CLASSIC ATLAS.

Edited and Revised by the Rev. H. MUSGRAVE WILKINS, M.A. Eight Maps, Coloured in Outline, with complete Index.

In square imperial, price 1*s*., stiff cloth cover.

WARNE'S SHILLING ATLAS.

With Twenty-six Maps, printed in Colours.

In square imperial, price 6*d*., sewed wrapper; or limp cloth, 1*s*.

WARNE'S SIXPENNY ATLAS,

Containing 16 Original Maps, printed in Colours, and a New Engraved Map of Geographical Definitions.

Uniform, price 6*d*. each, sewed; or limp cloth, 1*s*.

THE OUTLINES TO WARNE'S SIXPENNY ATLAS.
THE PROJECTIONS TO DITTO.

In fcap. 8vo, price 2*s*., cloth.

A CLASSICAL GEOGRAPHY.

For the use of the Junior Classes in Schools, in conjunction wit the Junior Classic Atlas. By the Rev. H. MUSGRAVE WILKINS.

A COMPLETE COMPENDIUM OF ENGLISH LITERATURE.

In crown 8vo, price 3*s*. 6*d*. each, cloth gilt.

Popular Readings, in Prose and Verse. Edited by J. E. CARPENTER. FIVE DISTINCT VOLUMES, each Complete, paged throughout, with Index. A General Index to the entire work is given with Vol. 5.

In fcap. 8vo, boards, price 1*s*. each, 256 pp.

Penny Readings, in Prose and Verse. Twelve Distinct Volumes. Compiled and Edited by J. E. CARPENTER, Twelve Years Public Reader, Lecturer, and Entertainer at the Principal Literary Institutions in Great Britain.

A full Prospectus of the contents can be had on application.

In fcap. 8vo, price 1*s*., picture boards.

Moseley's Penny Readings. IN PROSE AND VERSE. Embracing many of the Popular Readings of Mr. J. M. BELLEW, Mrs. DAUNCEY MASKELL, &c.

In fcap., Two distinct Volumes, price 1*s*. each.

Tom Hood's Comic Readings. Embracing the Comic Readings of the last Hundred Years.

In fcap. 8vo, price 1*s*., picture boards.

Choice Readings. Fifty-two Stories of Brave Deeds. Selected and Edited by the Rev. G. T. HOARE.

In 48mo, price 1*s*. 6*d*., cloth gilt;
or roan, pocket-book style, with elastic band, 2*s*. 6*d*.

The Bijou Gazetteer of the World. Briefly describing, as regards Position, Area, and Population, every Country and State, their Sub-divisions, Provinces, Counties, Principal Towns, Villages, Mountains, Rivers, Lakes, Capes, &c. By W. R. ROSSER. 30,000 References.

COMPENDIUMS OF ENGLISH LITERATURE.

In Four Vols., each Volume Complete in itself, with Index, crown 8vo, price 5*s*. each, cloth gilt, with Steel Illustrations.

HALF-HOURS WITH THE BEST AUTHORS.

Remodelled by its Original Editor, CHARLES KNIGHT, with Selections from Authors added whose works have placed them amongst the "Best Authors" since the publication of the First Edition.

*** This book contains 320 Extracts of the best efforts of our great Standard Authors, whether they be Poets or Historians, Essayists or Divines, Travellers or Philosophers, arranged so as to form half an hour's reading for every day of the year. The student finds a taste of every quality, and a specimen of every style. Should he grow weary of one author, he can turn to another; and if inclined to be critical, he can weigh the merits of one writer against those of his fellow. It gives us a glimpse of the celebrities assembled within its portals. At a glance the student can obtain some idea of the subject. *Such books are the true foundations of that knowledge which renders men celebrated and famous.*

Ditto, THE LIBRARY EDITION, 4 vols., with a Complete Index, price 21*s*.; or half calf extra, 35*s*.

In Two Vols., demy 8vo, price 10*s*., cloth; 12*s*. with gilt edges; or half-calf extra, 17*s*.

THE PEOPLE'S EDITION OF

HALF-HOURS WITH THE BEST AUTHORS.

Selected and Edited by CHARLES KNIGHT. With 16 Steel Portraits.

In this Edition the Biographies are revised, the Pagination of the Volumes completed, and the Serial Nature of the Original Work entirely done away with; it now forms a Handsome Library Book.

In One Vol., demy 8vo, cloth, 5*s*.; with gilt edges, 6*s*.; or half-calf extra, 8*s*. 6*d*.

HALF-HOURS OF ENGLISH HISTORY.

Selected and Arranged by CHARLES KNIGHT.

A Companion Volume to the "Half-Hours with the Best Authors."

Contains the Choicest Historical Extracts from upwards of Fifty Standard Authors, including Burke, Palgrave, Guizot, Sheridan Knowles, Thierry, H. Taylor, Rev. James White, Charles Knight, G. L. Craik, Landor, Hume, Keats, Hallam, Southey, Shakspeare, Froissart, Sir Walter Scott, Hall, Barante, Lord Bacon, Cavendish, Bisho) Burnet, Rev. H. H. Milman, Wordsworth, Lord Macaulay; with a General Index.

The articles are chiefly selected so as to afford a succession of graphic parts of English History, chronologically arranged, from the consideration that the portions of history upon which general readers delight to dwell are those which tell some story which is complete in itself, or furnish some illustration which has a separate as well as a general interest.

Notable Novels.

COMPLETE EDITIONS.

Large crown 8vo, *6d.*, each, picture wrappers.

1.	Scottish Chiefs.	Miss JANE PORTER.
2.	Uncle Tom's Cabin.	Mrs. STOWE.
3.	St. Clair of the Isles.	ELIZABETH HELME.
4.	Children of the Abbey.	E. M. ROCHE.
5.	The Lamplighter.	Miss CUMMINS.
6.	Mabel Vaughan.	Miss CUMMINS.
7.	Thaddeus of Warsaw.	Miss PORTER.
8	The Howards of Glen Luna.	Miss WARNER.
9.	The Old English Baron, and The Castle of Otranto.	
10.	The Hungarian Brothers.	Miss PORTER.
11.	Marriage.	Miss FERRIER.
12.	The Inheritance.	Miss FERRIER.
13.	Destiny.	Miss FERRIER.
14.	The King's Own.	Captain MARRYAT.
15.	The Naval Officer.	Captain MARRYAT.
16.	Newton Forster.	Captain MARRYAT.
17.	Richelieu.	G. P. R. JAMES.
18.	Darnley.	G. P. R. JAMES.
19.	Philip Augustus.	G. P. R. JAMES.
20.	Tom Cringle's Log.	MICHAEL SCOTT.
21.	Peter Simple.	Captain MARRYAT.
22.	Mary of Burgundy.	G. P. R. JAMES.
23.	Jacob Faithful.	Captain MARRYAT.
24.	The Gipsy.	G. P. R. JAMES.
25.	Cruise of the Midge.	M. SCOTT.
26.	Two Years Before the Mast.	R. H. DANA.
27.	The Pirate and the Three Cutters.	Capt. MARRYAT.
28.	Henry Masterton.	G. P. R. JAMES.
29.	John Marston Hall.	G. P. R. JAMES.
30.	Japhet in Search of a Father.	Captain MARRYAT.
31.	The Wolf of Badenoch.	T. D. LANDER.
32.	Caleb Williams.	WILLIAM GODWIN.
33.	The Pacha of Many Tales.	Captain MARRYAT.
34.	The Vicar of Wakefield.	OLIVER GOLDSMITH.
35.	Mr. Midshipman Easy.	Captain MARRYAT.
36.	Attila.	G. P. R. JAMES.
37.	Rory O'More.	SAMUEL LOVER.

Popular Cookery Books.

In crown 8vo, price 2*s*. 6*d*., cloth gilt.

Warne's Every Day Cookery Book.

With nearly 2,000 Receipts, and Coloured Illustrations by KRONHEIM.

Warne's Every Day Cookery Book.

Also a 3*s*. 6*d*. Edition of each of the above, with Additional Coloured Illustrations, half-bound, gilt lettering.

In large crown 8vo, price 1*s*., cloth boards; or half-bound, 1*s*. 6*d*.

Warne's Model Cookery and Housekeeping Book.

800 Receipts, and Coloured Illustrations of Fifty Dishes.

In square 16mo, price 2*d*., cloth cover, 64 pp.; sewed, 1*d*.

Warne's Cookery Book for the Million.

With upwards of 200 Useful and Practical Receipts.

In royal 48mo, price 1*s*., cloth, gilt edges.

My Market Table.

Showing the Value of any Article, at per Pound and Ounce, from Sixpence to Eighteenpence. *Invaluable to all Housekeepers who appreciate economical expenditure.*

Popular Handy Manuals.

In crown 8vo, price 2*s*. 6*d*., cloth gilt.

The Young Woman's Book:

A Gathering of Useful Information in Household Matters, Taste, Duties, Study, &c., &c. With Practical Illustrations.

In large crown 8vo, price 2*s*. 6*d*., cloth gilt.

Best of Everything.

By the Author of "Enquire Within." Containing 1,800 Useful Articles on how to obtain "The Best of Everything," with a Special Calendar for the Cook and Gardener for each Month.

In large crown 8vo, price 2*s*. 6*d*., cloth gilt.

Home Doctoring:

A Guide to Domestic Medicine and Surgery. By a Member of the Royal College of Surgeons (England). With Coloured Plates.

The Chandos Classics.

A Series of Standard Works in Poetry, Biography, &c.

In large crown 8vo, price *1s. 6d.* each, stiff wrapper; or cloth gilt, *2s.*

Shakspeare, Complete. Including Life, Glossary, &c.
Longfellow's Poetical Works. Including Original Poems.
Byron's Poetical Works. With Explanatory Notes.
Scott's Poetical Works. Notes.
Arabian Nights (The) Entertainments. New Edition.
Eliza Cook's Poems. Complete.
Legendary Ballads of England and Scotland.
Burns' Poetical Works. With Memoir, &c.
Johnson's Lives of the Poets.
Dante: Vision. Trans. by CARY.
Moore's Poetical Works. With Explanatory Notes, &c.
Dr. Syntax's Three Tours. With Coloured Portrait.
Butler's Hudibras. With Notes by ZACHARY GREY.
Cowper's Poetical Works. Complete Edition.
Milton's Poetical Works.
Wordsworth's Poetical Works.
Twice-told Tales. By NATHANIEL HAWTHORNE.
Hallam's Constitutional History of England.
History of the Saracens. By GIBBON and OCKLEY.
Robinson Crusoe. Unabridged. Woodcuts by GRISET.
Swiss Family Robinson. Including Sequel. With Illustrations.
Mrs. Hemans' Poetical Works. With Memoir, &c.
Grimm's Fairy Tales.
Andersen's (Hans) Fairy Tales.
Scott's Lives of Eminent Novelists and Dramatists.
Scott's Essays on Chivalry, Ro-mance, and the Drama.
Shelley's Poetical Works.
Campbell's Poetical Works.
Keats' Poetical Works.
Coleridge's Poetical Works.
Pope's Iliad. With FLAXMAN'S Illustrations.
Pope's Odyssey. Ditto.
Hood's Poetical Works.
Representative Actors.
England. (Romance of History.) By HENRY NEALE. Illustrations by T. LANDSEER.
France. (Romance of History.) By LEITCH RITCHIE. Illusts by ditto.
Italy. (Romance of History.) By C. MACFARLANE. Illusts. by ditto.
Spain. (Romance of History.) By Don T. de TRUEBA. Illustrations by J. K. MEADOWS.
India. (Romance of History.) By Rev. HOBART CAUNTER, B.D.
German Literature, as exemplified by the Works of TIECK, RICHTER, and ZSCHOKKE.
Don Quixote, The Life and Adventures of. By CERVANTES.
Eastern Tales.
Dodd's Beauties of Shakspere.
Book of Authors.
The Talmud. By H. POLANO.
Virgil (Dryden's) The Works of.
Clare's Remains.
Pope's Poetical Works.
Mackay's Complete Works.
Goldsmith's Poems, &c.
Sale's Koran. (Complete.)
Oxenford's French Songs.
Gil Blas, The Adventures of.
Romance of London – Historic. By JOHN TIMBS.
Romance of London — Supernatural. By JOHN TIMBS.
A Century of Anecdote. Ditto.
Walton and Cotton's Angler.
Herbert's (George) Works.
Heber's (Bishop) Poetical Works.
Half-Hours with the Best Authors
Ditto **
Ditto ***
Ditto ****
Bunyan's Pilgrim's Progress.
Fugitive Poetry. 1600–1878. Edited by J. C. HUTCHIESON.
Pepys' Diary.
Evelyn's Diary.
Townsend's Modern Literature. *
Ditto Ditto **
Montgomery (James).
Spenser's Faery Queen.
White's Natural History of Selborne.
Keble's Christian Year.
Lamb's Poems and Essays.

In demy 8vo, price 7*s*. 6*d*., cloth gilt.

The Horticulturist; or, The Culture and Management of the Kitchen, Fruit, and Forcing Garden. With numerous Engravings by J. C. LOUDON. Revised by W. ROBINSON, F.L.S.

In small crown 8vo, price 3*s*. 6*d*. each, cloth gilt.

Loudon's Amateur Gardener's Calendar. Being a Monthly Guide as to what should be Avoided, as well as what should be Done in a Garden in Each Month, with Illustrations. Revised by W. ROBINSON, F.L.S.

Ditto, picture boards, 2*s*.

English Wild Flowers. By J. T. BURGESS. Fine Edition. With numerous Illustrations and Coloured Plates.

Also, POPULAR EDITION, in fcap. 8vo, price 1*s*., picture boards, with Plain Illustrations.

Villa Gardening. By WILLIAM PAUL, F.L.S., F.R.H.S., &c., Author of the "Rose Garden." Third Edition, entirely revised and re-edited, with Practical Illustrations.

Ditto, picture boards, 2*s*.

In crown 8vo, price 3*s*. 6*d*., cloth gilt; or picture boards. 2*s*.

Modern Practical Gardening: Combining VEGETABLES, FLOWERS, FRUIT, their Culture and Produce. By ELIZABETH WATTS. With Practical Plates and Coloured Illustrations.

In medium 8vo, price £3 15*s*., cloth gilt and gilt edges.

The Flowering Plants, Grasses, and Ferns of Great Britain. By ANNE PRATT. Fine Edition, in Six Volumes. Containing upwards of Three Hundred Coloured Plates.

In medium 8vo, price 12*s*. 6*d*., cloth gilt and gilt edges.

The Ferns of Great Britain, and their Allies, the Club-Mosses, Pepperworts, and Horsetails. By ANNE PRATT. Containing 41 Coloured Plates.

Loudon's Encyclopædia of Cottage, Farm, and Villa Architecture and Furniture. Containing numerous Designs for Dwellings, from the Villa to the Cottage and the Farm, including Farm-houses, Farmeries, and other Agricultural Buildings, &c. &c. Illustrated by upwards of Two Thousand Engravings.

J. OGDEN AND CO., PRINTERS, 172, ST. JOHN STREET, E.C.